



# **STIC Search Report**

**EIC 3600**

STIC Database Tracking Number: 144444

TO: Alex Kalinowski  
Location: KNX 4B59  
Art Unit: 3627  
July 1, 2005  
Case Serial Number: 09/583336

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## **Search Notes**



# STIC Search Results Feedback Form

**EIC 3600**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

**Karen Lehman, EIC 3600 Team Leader**

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 3620 (optional)
- Relevant prior art **found**, search results used as follows:
- ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- ☐ Foreign Patent(s)
  - ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)
- Relevant prior art **not found**:
- ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

**Comments:**

**Drop off or send completed forms to EIC3600 PK5 Suite 804**



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DIALOG(R) File 587:Jane`s Defense&Aerospace  
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Word Count:2417

FEATURE - MILITARY MEDICINE GOES DIGITAL\  
INTERNATIONAL DEFENSE REVIEW (IDR) MAY 01, 1996 p. 1 v.01 no. 05  
By: Mark Hewish

NATO's Implementation Force (IFOR) in Bosnia is using a wide range of recently developed medical technologies to provide faster and more effective treatment of casualties.

Under Operation Primetime III, the US Army's Medical Advanced Technology Management Office (MATMO) has installed a telemedicine network at a cost of US\$10.5 million to support the 20,000 US troops within IFOR. Primetime III links a chain of US Army hospitals throughout Hungary and Bosnia with the Landstuhl Regional Medical Center (LRMC) in Germany, and with other facilities in Europe and the United States. This allows medical personnel in the field to transmit diagnostic-quality images and supporting data to specialized staff at a central facility, and to gain access to computer databases and other information sources.

The latest effort is an extension of Operation Primetime, which began in 1993 to provide telemedicine facilities to units based in Macedonia and Croatia. This was upgraded to Operation Primetime II in late 1995, with a thirtyfold increase in bandwidth in order to provide increased diagnostic capabilities. Telemedicine can lower combat casualties, and helps to maintain troop strength and readiness by reducing the number of needless evacuations. It also decreases the effects of disease and non-battle injuries, which have traditionally had the more damaging effects on force sustainment.

Primetime III allows medical units to access computerized records, track patient evacuations, use full-motion video for teleconsultation, and exchange information via clinical e-mail. Recent tests have included the transmission of diagnostic-quality (2kbit) radiological images over the Internet from the aircraft carrier USS George Washington, operating in the Adriatic, to LRMC.

Primetime III is complemented by the Remote Clinical Consultation System (RCCS) and Medical Diagnostic Imaging Support (MDIS) programs. The RCCS, which made its debut in 1993 as part of Operation Restore Hope in Somalia, transmits diagnostic-quality images over satellite links from remote facilities to specialists at tertiary-care medical centers. The portable element located in field hospitals uses a laptop computer, with a built-in modem, running software for word processing, graphics, database management and communications. The computer processes and transmits high-resolution colour images provided by a Kodak digital camera equipped with an internal hard disk. The more comprehensive suite of equipment at a medical centre includes a larger computer with an optical disk drive, and a colour printer that provides electronic photographs without requiring a darkroom.

MDIS exploits teleradiology techniques in combination with a Picture Archive and Communications System (PACS) to increase the amount of information captured from radiographs. It acquires diagnostic images in a digital format, archives and manages them in a database, rapidly displays relevant images and patient data on clinical and diagnostic workstations, and feeds into a Radiology Information

System (RIS). Optical storage of radiographs provides easier and faster access to images, and reduces problems with images being lost or out on loan when they are required. It also permits greater sharing of archived images among medical centres and eliminates the need for chemical film developers.

The US armed forces are also integrating telemedicine and teleradiology facilities into the Deployable Medical Systems (DEPMEDS) family, which has recently completed initial fielding. The US Army's Medical Force 2000 re-organization includes four types of deployable hospital: forward-operating Mobile Army Surgical Hospitals, Combat Support Hospitals, Field Hospitals and General Hospitals. Each comprises different configurations of DEPMEDS modules, such as operating rooms, laboratories, X-ray units and wards.

The US Army Medical Department's future telemedicine (T-Med) program forms part of the service's overall Force XXI battlefield digitization initiative. T-Med acts as an umbrella for six thrusts that are providing prototype equipment for testing from Fiscal Year 1995 to 2000, when production decisions are due to be made. Other agencies and services are pursuing similar programs. Many of these efforts involve equipment for far-forward (pre-hospital) operations, particularly to provide support in the critical first "golden hour" after wounding (during which 80% of deaths resulting from injuries received in battle occur). The early moments of this period are the most critical, and efforts are concentrating on providing aid within 5-15min.

The Walter Reed Army Institute of Research (WRAIR), in collaboration with other agencies, is developing prototypes for incorporation in its Far Forward Emergency Treatment System. Components of the system include the Personnel Status Monitor that SARCOS is developing as part of the Defense Healthcare Technologies Program run by the Advanced Research Projects Agency (ARPA); the associated DataPak, attached to a casualty by a combat medic, which downloads data from the PSM and operates sensors for physiological monitoring; a Trauma Control Module/Emergency Medical Manager, which in turn links the DataPak to the ventilator in a Life Support for Trauma and Transport (LSTAT) unit via radio; LSTAT itself, being developed by Northrop Grumman under another ARPA contract; and additional supporting technologies.

The availability of complete and accurate documentation has important long-term benefits beyond merely assisting in initial treatment. It provides information that forms the basis of subsequent care, becomes a part of permanent clinical records, and has significant applications in the fields of administration and epidemiology.

Despite the importance of data logging, however, studies have shown that corpsmen rarely fill out the standard field medical card (FMC) during combat. When they do, it takes an average of nearly 3.5min to enter complete, high-quality information. The FMC is easily lost or damaged, difficult to complete at night, requires a writing instrument, and may be illegible.

Initiatives to automate this process and provide additional facilities include ProMED and MediTag. The former is an effort to apply personal digital assistant (PDA) technology to combat medicine. KPMG Peat Marwick, in conjunction with Apple Computers, has developed software that provides access to patients' medical records and laboratory results over wireless links via Apple Newton handheld computers. MediTag is a portable rugged solid-state memory device that can transfer more than 3Mbytes of patient information in

less than 2s via direct "swiped" contacts.

The Personnel Status Monitor (PSM) uses wearable biomedical devices that combine processing functions with micro-electromechanical systems. In the final configuration, each soldier on the battlefield would wear a thin belt-like band, next to his or her body, containing biomedical sensors and a wireless local-area network for data processing. These sensors measure parameters such as temperature, heart rate, breathing rate, and mean arterial blood pressure. Other equipment - a Global Positioning System (GPS) receiver, spread-spectrum radio, controller and battery packs - is integrated with the standard load-bearing equipment, with a wristworn display showing time and location. The remainder of the system includes central PSM command units based on laptop computers, handheld units carried by combat medics, and communications links.

PSM provides the ability to locate and identify all friendly forces on the battlefield, thereby enhancing situational awareness and reducing the risk of fratricide. The command unit displays whether given individuals are dead or alive, and gives details of their physiological state. This allows medical attention to be directed quickly and accurately to the casualties that will benefit most. The PSM then continues to provide useful information throughout evacuation and subsequent treatment.

The PSM is evolving through a series of stages, each providing additional capabilities. Initial efforts concentrated on simply indicating whether the individual was alive or dead. The second stage, involving approximately 700 prototype units for testing at the US Army Ranger School, adds sensors to provide early warning of the onset of hypothermia. Subsequent phases involve the monitoring, recording and interpretation of physiological data, together with remote presentations of the degree of injury (both individually, and in relation to others for triage purposes).

The DataPak, which a combat medic attaches to the casualty on arrival, is a device the size of a personal stereo. It takes over responsibility for monitoring and data logging, using information that continues to be supplied by the PSM, and contains the drive and data-acquisition electronics for both invasive and non-invasive sensors. These provide readouts of parameters such as blood acidity, oxygen, carbon dioxide, lactate and glucose, together with cardiac output, heart rate, respiratory rate and blood pressure. The DataPak also contains controllers that regulate ventilators, oxygen supplies, resuscitation fluid and drug-delivery systems. The prototype generates a signal based on blood pressure to control the flow rate of an infusion pump.

The Trauma Control Module (TCM) is a small, wearable computer driving a head-mounted display. This allows the medic to access personal information - such as the patient's name, rank, unit, medical history and medications - from the PSM, acquire the history of vital-sign changes held by the DataPak, and run the Emergency Medical Manager (EMM) expert software system. The EMM provides "mentoring" facilities that recommend the most appropriate course of action, based on DataPak inputs and information that the medic enters by voice commands.

LSTAT is a self-contained suite of electrical and mechanical devices, fitted beneath a standard NATO casualty litter, that monitors critically injured patients during transport from the battlefield to a surgical unit and thence to a fixed facility. It provides oxygen, mechanical ventilation, suction and environmental control, using vehicle power supplies or batteries. With its canopy

in place, LSTAT acts as an environmentally protected and temperature-controlled pre-operative "waiting room" as well as a post-operative intensive-care unit during evacuation. These factors are expected to result in a 5-10% reduction in battlefield mortality.

LSTAT can additionally function as the surgical platform in a roving unit such as the Armored Treatment and Transport Vehicle (ATTV). United Defense is due to supply a prototype ATTV for participation in the Task Force XXI battlefield-digitization exercise during the spring of 1997. The ATTV, derived from the Bradley-based Command and Control Vehicle, is seen as the successor to the M113 armoured ambulance. A production decision is due in late 1999.

WRAIR is also developing less technologically complex equipment that nevertheless can make a significant contribution to patient survival. These include a miniature intravenous resuscitation pump, designed to replace gravity-driven drips, to reverse shock by delivering fluids at a rate matched to the casualty's blood pressure, volume and content. The disposable battery-operated, servo-controlled pump, which weighs less than 300g, delivers up to 180ml/min. Such a device may eventually be issued to every soldier on the battlefield, together with 1 litre of resuscitation fluid. WRAIR is developing algorithms for a closed-loop system that would deliver the appropriate amount, and determine whether bleeding is under control, when trained personnel are not available.

The walls of the intravenous catheter used to deliver fluids could contain miniature sensors to measure blood characteristics, thereby avoiding the need for a second puncture and providing additional data for the closed-loop mechanism. Candidate approaches include the use of fibre-optic sensors, and elements fabricated from conductive polymers. WRAIR has also built and evaluated miniature glucose sensors.

Other initiatives within the T-Med program include the Mobile Medical Mentoring (M3) Vehicle and the Digital Field Hospital. The M3 is a HMMWV (High Mobility Multi-purpose Wheeled Vehicle) carrying a shelter that contains imaging workstations and communications facilities to permit "tailgate telemedicine". The Digital Field Hospital involves the addition of appliques to provide a medical image and data-acquisition system, local-area network and a communications package to support expert consultation.

In all, ARPA is sponsoring over 20 developments that can benefit military medicine. These include the MEDFAST program, being conducted by Foster-Miller on behalf of the US Army Medical Department, to provide a "toolbox" of casualty care and treatment modules that can be installed in a vehicle with stretcher mounts or cargo tie-down points. The US Department of Energy's Pacific Northwest Laboratory (PNL), in collaboration with the Madigan Army Medical Center, is developing an Advanced Imaging System (AIMS) that uses ultrasound to locate and monitor internal injuries. The equipment will generate three-dimensional images in real time, showing biological damage such as internal bleeding and locating bullets or fragments lodged in the body. AIMS could form the field end of a remote diagnosis system, either in its own right or as part of a critical-care trauma pod such as LSTAT.

Under another ARPA contract, SRI International is developing a battlefield version of its Telepresence Surgery System that will allow combat surgeons to operate on patients without being physically present. This is expected to result in a 20-40% reduction in deaths from bleeding that have historically occurred before

definitive treatment was available. A Remote Surgical Unit (RSU), positioned above the operating table, contains the instruments, manipulators and stereographic cameras. The RSU is connected by wire, optical cable, microwave or satellite link to the Telesurgeon's Console. The surgeon, looking down into a stereo image of the wound, sees his remote instruments as he carries out the operation. Specially developed surgical telemanipulators and feedback mechanisms allow him to feel tissues as they are touched, and the tug on a suture, as he would in a conventional operation.

Northrop Grumman's Advanced Technology and Development Center has signed a five-year co-operative agreement with ARPA to exploit combat-aircraft technologies in developing the Operating Environment of the Future (OEF), incorporating a virtual-reality surgical training system. The OEF has three main components. The Smart Surgical System monitors a patient's physiological condition, using non-invasive sensors built into a table, and transmit the data over wireless link to an Intuitive Display and Command System (IDACS). This interactive system, activated by voice or via a touch-screen, provides the surgeon with information in an easily understood format. It can also link with doctors at other locations, allowing them to observe procedures or provide additional information.

The surgeon can retrieve medical records and gain access to supporting information, including data generated by the Intelligent Virtual Patient Environment (IPVE). This consists of an "intelligent" mannequin, surgical instruments and displays that allow the surgeon to see replications of a particular disease or wound. He or she can then "operate" on the mannequin and view the results in virtual reality. Ethicon Endo-Surgery, a Johnson & Johnson company that is teamed with Northrop Grumman on the OEF program, is already developing a similar commercial virtual-reality surgical training system.

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Photograph:

Northrop Grumman, working with the US Army, is developing a self-contained miniature intensive-care unit under ARPA's Life Support for Trauma and Transport (LSTAT) program. LSTAT will stabilize patients while they are transported by ground vehicles or helicopters, such as the UH-60Q medevac version of the Sikorsky Black Hawk illustrated here. The US Army National Guard is providing US\$17 million for a two-year evaluation of the UH-60Q. Specialized facilities include accommodation for up to six stretchers in an environmentally controlled cabin, on-board oxygen generation, equipment for patient monitoring and treatment, an electrically powered rescue hoist, two 230-gallon external fuel tanks, upgraded avionics linked by a MIL-STD-1553B databus, and a forward-looking infrared (FLIR) set. (Northrop Grumman)

Photograph:

SAIC has developed a rugged, portable medical system based on the V2A1 variant of its Lightweight Computer Unit (LCU) to support triage and telemedicine applications. Blood pressure, electrocardiogram and pulse oximetry (the amount of oxygen in the blood) are measured non-invasively, with outputs being managed and displayed in an easily understood format on the computer screen. The resulting data may also be transmitted over standard military communications facilities. The addition of a real-time video card providing freeze-frame capture allows images of wounds to be passed on to higher echelons for consultation. SAIC is studying further developments, using the V2A2 variant based on a 90MHz Pentium chip. This would add colour displays and Doppler ultrasound facilities. (SAIC)

Photograph:

French United Nations troops carry a wounded soldier to a waiting helicopter at Sarajevo in August 1995. (EPA)

Photograph:

The Personnel Status Monitor, currently being developed by the Defense Healthcare Technologies Program at ARPA (Advanced Research Projects Agency). In the final configuration, the soldier would wear a thin belt containing biomedical sensors and a wireless local-area network. (ARPA/SARCOS)

Photograph:

The broadening of the Dutch armed forces' responsibilities and the ensuing creation of an air-mobile brigade led to a requirement for a lightweight, modular field hospital that could be assembled and ready for use within 90min of arriving on-site. The Royal Netherlands Army has ordered four such units from Fokker Special Products, for delivery between mid-1997 and the end of 1998.

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? show files;ds

File 198:Health Devices Alerts(R) 1977-2005/Jun w3

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File 587:Jane's Defense&Aerospace 2005/Jun w4

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File 589:FI Defense Market Intelligence 2005/Jun 30

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Set	Items	Description
S1	29	WEARABLE()COMPUTER?
S2	16	S1 NOT PY>2000
S3	13	RD (unique items)
S4	1193	(MEDICAL OR HEALTH)()(RECORD? ? OR DATA OR INFORMATION OR - FILE? ?)
S5	4	S1 AND S4
S6	3	S5 NOT PY>2000
S7	3	RD (unique items)
S8	1	S7 NOT S3
S9	1	SANDISK
S10	114	PIC OR PERSONAL()INFORMATION()CARRIER? ?
S11	108	S10 NOT PY>2000
S12	108	RD (unique items)
S13	107	S12 NOT PERCUTANEOUS()INTRAVENOUS()CATHETER? ?
S14	2	PERSONAL()INFORMATION()CARRIER? ?
S15	478	PENDANT? OR OBELISK? OR OBELISC? OR SAUCER? ? OR BRACELET? ? OR JEWELRY OR NECKLACE? OR (HANG? OR AROUND OR SURROUND?)(1- W)NECK OR ADORNMENT
S16	0	S1 AND S15
S17	176	(WEAR? OR WORN? OR HANG?)(5N)BODY
S18	0	(WEAR? OR WORN? OR HANG?)(5N)BODILY
S19	3	S4 AND (S15 OR S17)
S20	3	RD (unique items)
S21	2	S15(5N)(S4 OR RECORD? ? OR PERSONAL()(DATA OR INFORMATION))
S22	2	(S15 OR S17)(5N)(S4 OR RECORD? ? OR PERSONAL()(DATA OR INF- ORMATION))
S23	0	S22 NOT S21
S24	4	(S15 OR S17) AND (TELEMEDICINE? OR TELE()MEDICINE)
S25	2	PERSONAL()INFORMATION()CARRIER? ?
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3/7/6 (Item 6 from file: 587)

DIALOG(R)File 587:Jane's Defense&Aerospace

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Word Count:4540

FEATURE - WEARABLE INFORMATION TAILORED TO BATTLEFIELD\

INTERNATIONAL DEFENSE REVIEW (IDR) NOVEMBER 01, 1996 p. 1 v.001 no. 011

By: Mark Hewish

Miniature computers and head-mounted displays provide easy access to technology for individual personnel on the battlefield while alleviating a measure of their workload.

The advent of compact but powerful hand-held or body-worn computers, often used in conjunction with head-mounted displays, is providing dismounted personnel with facilities that were formerly restricted to fighter pilots or tank commanders. The amount of information available to individuals on the battlefield or in supporting arms is increasing exponentially at the same time as manpower is decreasing. Under these circumstances, personnel cannot take on the extra burden of becoming information managers in addition to their traditional duties. Rather, they need access to technology that eases instead of increases their workload.

Many armies are sponsoring the development of lightweight computers and displays for use by infantry (see IDR 5/1996, pp.30-38). Even comparatively mundane tasks such as equipment maintenance can benefit from the introduction of such equipment. Powerful personal computers with large memories are replacing bulky, heavy paper manuals, providing virtually instant access to the relevant pages of drawings and tabular information. Maintenance crews can call up data about many types of equipment, including those with which they may not be familiar. By eliminating confusion over different procedures, and identifying spares that are relevant to the type they are working on, such systems can significantly enhance mission readiness and safety.

The computers may communicate with other equipment via radio, cellular telephone or wireless local-area network (LAN). Interfaces to GPS receivers, bar-code scanners and sensors such as miniature video cameras, provide additional inputs to support more complex applications. These can include image acquisition and manipulation, telemedicine and remote operation of unmanned vehicles.

The Israel Defense Force (IDF) Ordnance Corps is equipping its maintenance technicians with TechMate expert-system software, developed by local company Intelligent Electronics (IET), running on laptop computers. IET combined its AITEST fault-isolation expert system and OnDoc (on-line documentation) facility to provide the IDF with TechMate in just eight months, compared with the 18 months specified by the customer. This system underwent three series of field trials, with successively improved software, at the end of which even reserve personnel awarded the system an average mark of 94 per cent in terms of satisfaction with its operation and their willingness to use it in the field. Their performance level when conducting maintenance was assessed at 84.5 per cent using TechMate, compared with 52 per cent without it.

TechMate identifies the possible cases of each fault, then recommends the appropriate action (which may involve testing, calibration, repair or replacement). On-line documentation available to the technician includes text, photographs and schematics, providing step-by-step instructions and descriptions of each procedure. The data collected by individual operators may later be downloaded on to a central workstation running database management tools for functions such as failure-rate tracking, reliability analysis and inventory management. Other users of IET's fault-isolation software products include the US Air Force (USAF), UK Ministry of Defence (MoD) and several European air

forces.

The US Defense Advanced Research Projects Agency (DARPA) is sponsoring a series of programs to develop both the basic technological building blocks and complete systems based on them. The agency's Smart Modules effort, formerly known as the Tactical Information Assistants program, aims to develop and demonstrate novel ways of combining sensors, computers and communications equipment into lightweight packages with low power demands. It draws on technology developed under the earlier Head Mounted Displays (HMD) program, established in 1992, together with parallel efforts involving complementary electronic modules.

The HMD effort is intended to provide small flat-panel high-resolution displays that can replace heavy, expensive and bulky cathode-ray tubes. Potential applications include those in which hands-free operation is desirable or necessary. The program has already resulted in significant technological advances. These include the first active-matrix liquid-crystal display (AMLCD) and active-matrix electroluminescent (AMEL) device fabricated on single-crystal silicon to provide a resolution of 1,000 dots per inch (DPI); a 512x512-pixel ferroelectric liquid-crystal display (FLCD) fabricated with standard CMOS technology using color sequential lighting; and a unique 640x480-pixel color refractive LCD in a 5 mm<sup>2</sup> format, also based on a conventionally fabricated CMOS circuit, with pixel layouts that can be arranged in a pre-distorted pattern to compensate for optical anomalies. Further work is aimed at providing 2,000 DPI AMLCD and AMEL designs.

The Smart Modules initiative has spawned four products that support DARPA's Small Unit Operations program: the Technology Advanced Mini-Eyesafe Ranger (TAMER), Maintenance and Repair Support System (MARSS), MicroPathfinder and wearable Maintenance Assistant. The agency sees a potential requirement for more than 300,000 portable and nearly 50,000 non-portable systems in the US military alone.

Motorola Space and Systems Technology Group is developing TAMER under a 30-month DARPA contract that runs until May 1997. The company has built six prototypes, of which it has sold three to the US Army Communications-Electronics Command's Night Vision and Electronic Sensors Directorate for long-term evaluation. Others have participated in field exercises, including three rotations of the 4th Infantry Division through the National Training Center (a fourth was planned for October 1996), the last two Deep Look exercises conducted by the Utah National Guard, and an eight-week evaluation in the urban-assault role by the US Marine Corps (USMC) at Quantico.

During the initial concept-definition phase, Motorola enhanced the US Army's standard Mini-Eyesafe Laser Infrared Observation Set (MELIOS) by means of a prototype field-retrofittable kit that added the ability to provide target location (using a GPS receiver, laser rangefinder and compass/vertical-angle module), relay reports in digital form via SINCGARS radio, and show data on an external medium-resolution display using a commercially available personal digital assistant. These improvements led to a threefold improvement in determining target location, which was achieved in 3 per cent of the time taken with manual methods. Time spent generating and transmitting reports, which were 100 per cent accurate, shrank to 1 per cent of its former duration.

Motorola and its teammates, including Honeywell Technology Center, have introduced several enhancements. These include a redesigned chassis, the addition of the 640x480-pixel AMEL display developed under DARPA's HMD program, and several facilities implemented on industry-standard PCMCIA cards. One accommodates an SRAM (static random-access memory) that can hold digital maps for overlay on the HMD, another contains the electronic circuitry for a solid-state camera with a resolution of about 320x200 pixels, and a third houses a modem that allows TAMER to transmit reports over cellular-radio networks (a direct interface to a SINCGARS radio is

also available).

Other related efforts have improved the processor and reduced power consumption. "Dynamic throttling" of the frequency-controlled processor allows it to run at intermediate speeds when the full 25 MHz is not required. TAMER already accommodates a GPS receiver implemented as a multi-chip module, and this power-saving approach may be extended to other aspects. Motorola is evaluating technologies that could add a night-vision capability, including both image intensifiers and thermal imagers (in particular the uncooled cameras available from Lockheed Martin and Texas Instruments). Over the next six months, the company will also add a pan-and-tilt head and a two-way paging facility. These will permit remote operation, including steering of the sightline, and could lead to the adoption of further sensors such as laser designators.

The Huntsville Division of McDonnell Douglas Aerospace is developing MARSS for the US Army's Soldier Systems Command (SSCOM) with funding provided by DARPA under a 23-month contract awarded in April 1995. The system is intended initially to meet US Army requirements for testing, fault isolation and repair in support of its Total Asset Visibility logistics initiative. Much of the service's present automated test equipment is comparatively heavy, bulky and requires clean hands that are free to use a keyboard or mouse.

MARSS, which combines a lightweight vest-worn computer with an HMD and voice control, is intended to result in significant reductions to repair times by allowing technicians to work unencumbered while giving them access to the large amounts of information needed to support modern weapon systems. The open-architecture computer runs object-oriented software that controls and integrates plug-in measurement instruments, diagnostic processes, interactive electronic technical manuals and logistics databases.

The MARSS vest, which mounts the electronic modules connected by flex circuits to ensure ease of movement, weighs less than 5.5 kg. The mother board includes a low-power (2.9EV) Pentium processor running at up to 120 MHz, up to 128 Mbytes of memory and a hard-disk drive with a capacity of at least 1 Gbyte. An Intel Mobile Triton chipset provides dynamic power management, which reduces consumption to less than 18 W average and increases distribution efficiency. Six slots accommodate PCMCIA cards providing specific functions. These can include a GPS facility that allows soldiers to track their own position and locate the equipment that they are tasked to repair.

MARSS uses an Ultralife lithium-ion solid-electrolyte 12 V battery, which provides a long cycle life and high energy density (9 Ah) to permit 6 h of operation without recharging. In order to avoid the cost and complexity associated with active thermal control, while keeping the temperature of the chip in the central processing unit below 100°C and that of the surrounding electronic components to less than 70°C, MARSS uses an innovative but unspecified thermal-management approach for which a patent is pending.

The RoamAbout wireless LAN, which can transfer data at 1 Mbit/s over ranges of 150 m, draws less than 3 W in transmit mode and 1.5 W when receiving. In trials while installed within an M113 armored personnel carrier, the LAN achieved a 100 per cent success rate in transferring data through the vehicle's hull. Voice communication is by means of VoiceLAN, which McDonnell Douglas developed specifically for use with MARSS. This supports a group of up to seven units communicating at 800 kbit/s, with delays varying from 0.6 s to 2 s. The Verbex Listen voice-recognition software contains a vocabulary of 16,000 words and takes less than 6 min to train with 16 phrases.

The Head-Mounted Audio/Visual System (HMA/VS) consists of a microphone, earphones, monochrome flat-panel VGA display and the

associated interface electronics. The AMEL display, which DARPA and SSCOM have developed in association with Planar and Honeywell under the HMD effort, draws 4 W of power or less and allows clear reading in direct sunlight. MARSS uses the US Army's standard Integrated Diagnostic and Repair Information System interface software to provide simple and intuitive operation.

The first prototype MARSS, based on a 486 processor with flexible board packaging, successfully underwent a series of trials supported by the US Army's Logistics Integration Agency in October 1995. A more advanced variant using the Pentium processor met or exceeded all target requirements during its critical design review in February 1996. The design then participated in a Battle Lab warfighting Experiment at Fort Polk in May, including maintenance of Heavy Equipment Transport trucks and M109 howitzers by soldiers from the Louisiana National Guard. An advanced prototype is due for completion in the third quarter of 1996. Other applications could include logistics, command and control, intelligence, field medicine and special operations. The USAF, US Navy (USN) and Special Operations Command have shown interest in variants of MARSS, and McDonnell Douglas is investigating its applicability to supporting the F/A-18 naval attack fighter and C-17 airlifter.

USMC helicopter pilots and special forces are using the initial version of the Pathfinder hand-held computer for navigation. The device incorporates a 75 MHz 486 DX4 processor, C/A-code GPS receiver, RangelAN II wireless connection, pen input, zoomable maps - which show the current location of all team members - and rechargeable battery. BBN Systems & Technologies is now developing the second-generation MicroPathfinder, which fits in a shirt pocket and weighs only 225 g. Operating prototypes should be available for field trials within the next six months.

MicroPathfinder allows team members to exchange messages, view the location of other participants and see their map annotations as they are drawn. Each member has a miniaturized computer locator radio (CLR) that is linked to up to four personal electronic accessories (PEAs) by a BBN BodyLAN wireless local-area network. BodyLAN, which uses a low-power spread-spectrum technique to minimize the probability of detection, exchanges data at 100 kbit/s over a distance of 1.5 m.

The first PEA to be implemented is a hand-held remote display unit (RDU). Other candidates include a silent user alert, body core-temperature monitor and BBN's Personal Inertial Navigation System (PINS). The alerting system will use a skin-mounted buzzer to warn the operator when he approaches within or deviates by a preset amount from a predetermined line (such as a route or predicted point of contact), and when a message requiring his attention is received. The core-temperature monitor will use a pill, developed by Human Technologies (HTI), that the user swallows. This transmits up to 14 days'-worth of data to a new miniature belt-worn receiver, measuring some 7.5x5x2.5 cm, that BBN is developing to replace the bulkier HTI unit. Real-time temperature measuring will reduce the likelihood of troops dying of hypothermia.

PINS is intended for use when low power demands are required or GPS signals are unavailable, such as beneath tree canopy or within structures. The device integrates three linear accelerometers, based on microelectromechanical systems (MEMS) technology, with three miniature low-precision gyros into a package inserted into the wearer's shoe. The system exploits a zero-velocity updating process to bound the quadratic error growth in the inertially calculated position, which requires periodic contact with the ground. Compass data and gravity are also calculated at every step.

MicroPathfinder incorporates a mission planner in the form of a Microsoft Windows-based personal computer that links to the other units via a SINCGARS radio. This unit builds and distributes the common plan/map, referred to as the base map, to team members. The

planner acts as a full participant in the squad network, creating realtime annotations, tracking squad members, and sending and receiving messages. The initial implementation can accommodate up to nine mobile team members, the mission planner and a fixed differential GPS station.

The School of Computer Science at Carnegie Mellon University (CMU) leads a team that is developing the Wearable Maintenance Assistant under a 36-month contract awarded in April 1995. The project, which additionally involves Stanford University, IBM, Telxon, Apple Computer and Lockheed Martin, draws on CMU's experience with the earlier DARPA-sponsored Vuman 3 that the USMC evaluated for use in tracked-vehicle maintenance. This halved the number of personnel required for a given task, reduced inspection time by 40 per cent, cut post-processing time by 30 per cent, and led to a tenfold reduction in the weight of equipment deployed and the associated paperwork.

The current effort involves three generations of equipment. CMU is due to deliver four prototypes and 15 pre-production examples of the Speech Accessible Referential and Collaborative System, which generates animations of infrequently performed and complex procedures. The system involves a 900 g computer that can be waist/thigh-mounted or detached, operating with a speech-recognition input, 640x480-pixel color HMD and wireless speech/data communications.

The back-mounted Speech Accessible Augmented Reality System, weighing 1.8 kg, also has a speech-recognition input but employs a 640x480-pixel monochrome HMD that uses fine position sensing to superimpose images onto the system under repair. CMU will deliver eight prototypes and 30 pre-production units. The Speech Accessible Referential and Collaborative Data Collection System incorporates a 900 g waist/thigh-mounted computer, speech-recognition input, 1,024x1,024-pixel color HMD and wireless data/audio communications, which permit the exchange of text and images between the maintenance technician and a help desk. CMU is to produce 12 prototypes and 30 pre-production systems.

DARPA's Technology Reinvestment Project (TRP) - now known as the Dual Use Applications Program (DUAP) - has provided funding for other developments in body-worn computing and HMDs. Boeing Computer Services, in collaboration with Honeywell, Virtual Vision and CMU, has developed two prototype systems for use in aircraft assembly and maintenance. The Augmented Reality System (ARS) combines a see-through display with a long-range and highly accurate head-position/orientation tracking to project graphics on to specific co-ordinates of a workpiece with sufficient stability for them to appear as though they were painted on to the structure. Boeing Commercial Airplane Group is conducting field trials with the ARS, including its use in wire-bundle assembly.

The same team has also developed the Multimedia System (MMS), which uses a lightweight and inexpensive "see-around" HMD to provide a hands-free reference to computer data, pages from manuals, diagrams and videos. CMU has integrated its Navigator 2 computer with a new Virtual Vision 640x480-pixel monochrome HMD that swings out of the user's way when not required. The USAF has evaluated the MMS to assist C-135 maintenance at the Sacramento Air Logistics Center, and CMU demonstrated its use with the F-16 fighter at Wright-Patterson Air Force Base in the third quarter of 1996.

Industry is also drawing on technology from the Smart Modules program to develop other products. Raytheon E-Systems' combat cueing system employs portable emitter-location devices that exploit DARPA's advanced packaging techniques. Individual scouts use hand-held sensors to collect signals from threat emitters, which they provide - together with their own location and line-of-bearing - via datalink over SINGCARS radios to a base station.

Other organizations are using or evaluating commercially developed systems. Computing Devices Canada worked with the US Naval Special Warfare Command to demonstrate a prototype of its Flexible/Wearable Personal Computer (FWPC) - more familiarly known as The Wearable - during field concept demonstrations in late 1995. More recently, the US Army has been using the machine to translate between English and Serbo-Croat to support operations by the NATO Implementation Force in Bosnia. The USAF evaluated The Wearable for flightline maintenance in late 1995, and the USN was due to complete an assessment aboard USS Yorktown, its Smart Ship demonstrator, in October 1996.

The body-worn computer incorporates a 75 MHz 486 DX4 processor with 24 Mbytes of RAM and an Industry Standard Architecture (ISA) bus, together with four slots for plug-in PCMCIA cards that tailor the system to a specific mission. For example, the operator can plug in a card that provides differential GPS facilities for navigation, or one that interfaces with standard military radios. Computing Devices used IBM commercial off-the-shelf (COTS) voice software to develop a pre-dive checklist for the USN's SEAL Delivery Vehicle (SDV) MkIII submersible, replacing the traditional manual approach. One PCMCIA card held a 260 Mbyte hard-disk drive containing the DOS/Windows operating system and SDV voice checklist, with another accommodating a wireless modem; the remaining two slots were empty. A single operator, working in a noisy environment, successfully completed the check-out procedure in half the time normally taken by two SEALs and transmitted the report to a remote printer.

The second phase involved integrating digital military maps and/or aerial photography with a GPS function to assist in navigation. The 1:50,000 digitized maps typically used by SEALs may be viewed on either a wearable flat panel or an HMD (the latter being employed on this exercise), with the operator using voice commands to change scale and overlay information. The applications software uses GPS data to generate an icon on the map showing present position. The SEAL can also use voice commands to zoom in or out, and move left or right on the map, in order to scan a large area. This travel history may be stored for later playback, together with time and date, to compare actual mission results with the plan. For this phase of the evaluation, the 260 Mbyte PCMCIA card carrying the Windows/ DOS operating system also incorporated a facility to integrate city-street maps with GPS, with another card providing the differential GPS function. The remaining two slots were again empty.

The Wearable can provide navigation assistance to co-ordinate the activities of each squad member. At the request of Naval Special Warfare Command, Computing Devices participated in several reconnaissance exercises during the 1995 Joint Warfare Interoperability Demonstration (JWID). The SEAL operator used The Wearable to acquire and examine a digital photograph (using either the flat-panel or HMD), enhance it to his satisfaction, annotate it with current location and time derived from the GPS receiver card, and then transmit the results via digital radio. This operation typically takes 5-10 minutes. The computer's third slot contained the hard-disk drive removed from a Kodak DCS-420 digital camera, allowing it to acquire imagery.

For the purposes of this exercise, annotated images were transmitted to remote users by connecting The Wearable with an RS-232 interface to an Advanced Data Controller (ADC), thence to a KY-99 encryption device, which in turn was linked to an AN/PSC-7 Miniature Satellite Transceiver 20 (MSTE-20) or an AN/PRC-137 radio. For an operational application, the functions provided by these individual pieces of equipment could be implemented on PCMCIA cards plugged into the computer itself, thereby greatly reducing the overall weight and volume.

The US Army has been using a prototype of The Wearable to support NATO peacekeeping forces in Bosnia. Military personnel interview local Serbs and Croatians so as to obtain information on the

location of minefields. The wearable uses its voice-recognition facility to translate between English and Serbo-Croat, then broadcasts the question via a body-mounted speaker.

InterVision Systems, which acquired technology originally developed by Westinghouse for the US Army in the early 1990s, has introduced a series of hands-free computers. Its latest System Six implementation uses a 25MHz 486 SLC processor with up to 16 Mbytes of RAM and a 105 Mbyte removeable hard drive on a PCMCIA card. The belt-worn unit, which weighs 1.5Ekg, drives a miniature high-resolution display that attaches to a range of standard military helmets. The processor may be voice-activated or controlled via a miniature trackball or wrist-mounted keyboard.

Military customers for System Six include the USN, for which InterVision is developing a Virtual Information Display System (VIDS) for use aboard ship. VIDS will include wireless networking, giving maintenance and damage-control personnel access to remote manuals. A video camera integrated with the advanced HMD will support teleconferencing for a variety of applications, and the use of intelligent voice-recognition "agents" will permit hands-free switching between control and communication functions.

The USN is already using the earlier System Five for a wide variety of applications, including antenna maintenance, inventory management and damage control aboard ships equipped with the Aegis weapon system. Tracor Applied Science has developed the Warehouse Inventory System (WIS), which incorporates an Oracle database-management system and can run on InterVision hardware. The combined system includes wristworn scanners that read bar-codes over short distances, others that have a range of 1-2 m, a data-transmission capability, and the ability to pass updated information from scanners to the database via the **wearable computer**.

Additional System Five applications include maintenance of F/A-18s aboard aircraft carriers, and explosive ordnance disposal. InterVision's British subsidiary has demonstrated the equipment to the UK MoD for potential applications that include maintenance of Challenger 2 tanks, AS90 howitzers, Trafalgar-class submarines and EH101 Merlin shipboard helicopters.

Phoenix Group Inc (PGI), established in 1994 by engineering and management personnel who formerly worked for Miltope, has developed a family of rugged miniature personal computers and ancillaries. These include the Nightingale miniature and Hummingbird micro-miniature personal computers, the RMM2 module and its Phoenix 2 belt-worn version, PEN-series pen computers and accessories. Customers include the US armed forces and the defense ministries of Australia, Singapore and Sweden. PGI has delivered several hundred PEN-7s to the US Army for its Force XXI Applique program, and is providing the PEN-10 for use with the SMART-T satellite terminal.

The tablet-style Nightingale, which weighs less than 1.35 kg, incorporates a dual shock-isolation system and will survive a 90Ecm drop on to a table. The computer will operate at temperatures from -25x C to +55x C, and is resistant to sand, dust and rain. It includes a 100 MHz (133 MHz optional) 486 processor, up to 64 Mbytes of DRAM, a removeable hard-disk drive with up to 320 Mbytes of capacity, and has a total of four slots for PCMCIA cards.

The 640x480-pixel active-matrix Super VGA color display has a built-in mouse and a 1,024x1,024-pixel touch screen that may be operated by the user's finger or by PGI's passive pen. A conventional sealed keyboard is available, as is access to a 2.4 GHz spread-spectrum frequency-hopping Ethernet-compatible LAN that can handle 1 Mbit/s. A built-in sound blaster permits voice recognition, audio recording and playback.

The even smaller 15x7x2.5Ecm Hummingbird, which weighs only 340 g, uses a DX4 processor running at 75MHz or 100 MHz. Standard



features include a 170EMbyte hard drive (320 Mbyte optional), 4 Mbytes of DRAM and a single PCMCIA slot. Many of the same options listed above are offered on the Hummingbird, as is an arm-mounted miniature keyboard.

The Phoenix 2 variant of the RMM2 rugged miniature computer module incorporates a 100 MHz DX4 processor and uses a 3.3 V low-power architecture. It also features an advanced power-management system, a nickel metal hydride battery cartridge with a "hot-swap" facility, a "fuel gauge" and a pointing device.

Xybernaut, formerly Computer Products & Services Inc (CSPI), holds a wide-ranging patent relating to belt-worn computers operating in conjunction with HMDs and using voice input. The company's Mobile Assistant combines a voice-controlled, belt-worn notebook computer measuring approximately 18x15x9Ecm and weighing less than 1.4 kg with a monocular head-up liquid-crystal display. The latter, using technology that Kopin developed under DARPA's HMD program, measures only 2.5 cm<sup>2</sup> yet "floats" a 35 cm-diagonal 640x480-pixel virtual image in front of the wearer.

The image is focused close to the working distance of the wearer's hands, rather than at infinity as with an aircraft head-up display, so that he or she can see both the projected information and the object being worked on simultaneously without having to refocus from one to the other. The wearer can "navigate" through on-screen interactive instruction sequences and parts catalogues by voice command while retaining an unimpeded view of the diagnostic task in hand. Mobile Assistant can also accept inputs from a wrist-worn miniature keyboard.

Xybernaut has licensed its technology to Rockwell's Collins Avionics & Communications Division, which promotes it under the name Trekker. Rockwell builds the Trekker/Mobile Assistant computer, and each company markets the other's products. The USAF and UK MoD are evaluating Trekker for potential use by maintenance crews working on airlifters (C-5s and C-17s) and military helicopters respectively. The processor runs both standard windows software and customized aircraft-maintenance routines. Rockwell is working with customers to develop interactive electronic technical manuals that combine elements of traditional paper-based documents with video-clip instructions, interactive questioning, problem-solving and communications, which may be via modem, LAN or wide-area network. The Trekker processor unit can plug into a MIL-STD-1553B databus to receive fault-analysis data directly from the aircraft, accept complete maintenance modules held on a CD-ROM, or receive other data via PCMCIA cards.

Rockwell is now developing its own next-generation Trekker 2020, based on a Pentium processor rather than the 486 of the present design, which the company expects to have available within a few months. Xybernaut is also working on future products, in this case using different processors.

USN personnel at Port Hueneme in California are using Vista Controls' See-Thru-Armor helmet-mounted display, which the company earlier demonstrated to the US Army at Fort Knox and Fort Sill, to assist in unloading cargo pallets from containers. At present, the USN requires that a second individual be located inside any container longer than 20 ft (6Em) to assist the forklift operator in positioning the vehicle's tines under each pallet. The use of the See-Thru-Armor system obviates the need for a second worker, thus halving the number of personnel involved and eliminating the attendant safety hazard.

Two fixed-focus color video cameras mounted on the front of the forklift truck feed a view of the tines and the standard 4x4x4 ft pallet via a radio-frequency link to the operator, who wears a belt-mounted receiver/battery pack and helmet-mounted color stereoscopic liquid-crystal displays. The operator can position the displays so that he looks at the outside world through the video presentation, or raise them for an unobstructed view of the

cab. In the latter case, he can view the video by raising his sightline, in much the same way as someone wearing bifocal spectacles.

Vista Controls is also developing a display and audio helmet device as part of the man-portable mine-detection system that Coleman Research Corp is developing for the US Army. The monochrome 640x480-pixel electroluminescent HMD shows data from the system's ground-penetrating radar and thermal camera. The company is also working on an HMD incorporating a gyro-derived head-position input for use with the USMC's Avenger air-defense systems. The See-Thru HMD will provide the gunner with his local air picture, relayed to the vehicle via datalink, and assist in target cueing by means of inputs such as look-left/right arrows.

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Photograph:

Computing Devices has begun low-rate production of The Wearable, which weighs less than 1.4 kg including batteries. The US Navy's SEAL special forces have evaluated the system for several roles, and NATO peacekeepers in Bosnia have used it to translate between English and Serbo-Croat. Computing Devices

Photograph:

Motorola is developing the Technology Advanced Mini-Eyesafe Ranger (TAMER) under DARPA's Smart Modules program. The company has enhanced the early prototype variant seen here by incorporating technology from DARPA's Head Mounted Displays program and other efforts. Motorola

Photograph:

McDonnell Douglas Aerospace leads a team that is developing the Maintenance and Repair Support System (MARSS) for the US Army's Soldier Systems Command as part of DARPA's Smart Modules effort. US Army

Photograph:

Xybernaut has supplied its Mobile Assistant body-worn voice-activated computer for several military applications. The Aviation Applied Technology Directorate of the US Army's Aviation and Missile Command uses the device in its Intelligent Fault Locator (IFL), illustrated here, to assist in maintaining AH-64 Apache attack helicopters. US Army

Photograph:

Rockwell is marketing Trekker running specialized software for applications including aircraft maintenance. Trekker uses a body-worn computer based on a 50 MHz 486 processor, with 16 Mbytes of RAM and a 540 Mbyte hard drive, coupled to the head-mounted display. Rockwell

Photograph:

PGI's Phoenix 2 belt-worn computer can interface with an arm-mounted keyboard and Reflection Technology's Private Eye high-resolution head-up display, which shows text and graphics in red on a black background. PGI

Photograph:

The US Navy is using Vista Controls' See-Thru-Armor helmet-mounted display to assist in unloading pallets from containers. Video cameras on the front of the forklift truck allow the operator to view the load via radio-frequency link. Vista Controls

3/7/8 (Item 8 from file: 587)

DIALOG(R)File 587:Jane's Defense&Aerospace

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FEATURE - MILITARY MEDICINE GOES DIGITAL\

INTERNATIONAL DEFENSE REVIEW (IDR) MAY 01, 1996 p. 1 v.01 no. 05

By: Mark Hewish

NATO's Implementation Force (IFOR) in Bosnia is using a wide range

of recently developed medical technologies to provide faster and more effective treatment of casualties.

Under Operation Primetime III, the US Army's Medical Advanced Technology Management Office (MATMO) has installed a telemedicine network at a cost of US\$10.5 million to support the 20,000 US troops within IFOR. Primetime III links a chain of US Army hospitals throughout Hungary and Bosnia with the Landstuhl Regional Medical Center (LRMC) in Germany, and with other facilities in Europe and the United States. This allows medical personnel in the field to transmit diagnostic-quality images and supporting data to specialized staff at a central facility, and to gain access to computer databases and other information sources.

The latest effort is an extension of Operation Primetime, which began in 1993 to provide telemedicine facilities to units based in Macedonia and Croatia. This was upgraded to Operation Primetime II in late 1995, with a thirtyfold increase in bandwidth in order to provide increased diagnostic capabilities. Telemedicine can lower combat casualties, and helps to maintain troop strength and readiness by reducing the number of needless evacuations. It also decreases the effects of disease and non-battle injuries, which have traditionally had the more damaging effects on force sustainment.

Primetime III allows medical units to access computerized records, track patient evacuations, use full-motion video for teleconsultation, and exchange information via clinical e-mail. Recent tests have included the transmission of diagnostic-quality (2kbit) radiological images over the Internet from the aircraft carrier USS George Washington, operating in the Adriatic, to LRMC.

Primetime III is complemented by the Remote Clinical Consultation System (RCCS) and Medical Diagnostic Imaging Support (MDIS) programs. The RCCS, which made its debut in 1993 as part of Operation Restore Hope in Somalia, transmits diagnostic-quality images over satellite links from remote facilities to specialists at tertiary-care medical centers. The portable element located in field hospitals uses a laptop computer, with a built-in modem, running software for word processing, graphics, database management and communications. The computer processes and transmits high-resolution colour images provided by a Kodak digital camera equipped with an internal hard disk. The more comprehensive suite of equipment at a medical centre includes a larger computer with an optical disk drive, and a colour printer that provides electronic photographs without requiring a darkroom.

MDIS exploits teleradiology techniques in combination with a Picture Archive and Communications System (PACS) to increase the amount of information captured from radiographs. It acquires diagnostic images in a digital format, archives and manages them in a database, rapidly displays relevant images and patient data on clinical and diagnostic workstations, and feeds into a Radiology Information System (RIS). Optical storage of radiographs provides easier and faster access to images, and reduces problems with images being lost or out on loan when they are required. It also permits greater sharing of archived images among medical centres and eliminates the need for chemical film developers.

The US armed forces are also integrating telemedicine and teleradiology facilities into the Deployable Medical Systems (DEPMEDS) family, which has recently completed initial fielding. The US Army's Medical Force 2000 re-organization includes four types of deployable hospital: forward-operating Mobile Army Surgical Hospitals, Combat Support Hospitals, Field Hospitals and General Hospitals. Each comprises different configurations of DEPMEDS modules, such as operating rooms, laboratories, X-ray units and wards.

The US Army Medical Department's future telemedicine (T-Med) program forms part of the service's overall Force XXI battlefield digitization initiative. T-Med acts as an umbrella for six thrusts that are providing prototype equipment for testing from Fiscal Year

1995 to 2000, when production decisions are due to be made. Other agencies and services are pursuing similar programs. Many of these efforts involve equipment for far-forward (pre-hospital) operations, particularly to provide support in the critical first "golden hour" after wounding (during which 80% of deaths resulting from injuries received in battle occur). The early moments of this period are the most critical, and efforts are concentrating on providing aid within 5-15min.

The Walter Reed Army Institute of Research (WRAIR), in collaboration with other agencies, is developing prototypes for incorporation in its Far Forward Emergency Treatment System. Components of the system include the Personnel Status Monitor that SARCOS is developing as part of the Defense Healthcare Technologies Program run by the Advanced Research Projects Agency (ARPA); the associated DataPak, attached to a casualty by a combat medic, which downloads data from the PSM and operates sensors for physiological monitoring; a Trauma Control Module/Emergency Medical Manager, which in turn links the DataPak to the ventilator in a Life Support for Trauma and Transport (LSTAT) unit via radio; LSTAT itself, being developed by Northrop Grumman under another ARPA contract; and additional supporting technologies.

The availability of complete and accurate documentation has important long-term benefits beyond merely assisting in initial treatment. It provides information that forms the basis of subsequent care, becomes a part of permanent clinical records, and has significant applications in the fields of administration and epidemiology.

Despite the importance of data logging, however, studies have shown that corpsmen rarely fill out the standard field medical card (FMC) during combat. When they do, it takes an average of nearly 3.5min to enter complete, high-quality information. The FMC is easily lost or damaged, difficult to complete at night, requires a writing instrument, and may be illegible.

Initiatives to automate this process and provide additional facilities include PROMED and MediTag. The former is an effort to apply personal digital assistant (PDA) technology to combat medicine. KPMG Peat Marwick, in conjunction with Apple Computers, has developed software that provides access to patients' medical records and laboratory results over wireless links via Apple Newton handheld computers. MediTag is a portable rugged solid-state memory device that can transfer more than 3Mbytes of patient information in less than 2s via direct "swiped" contacts.

The Personnel Status Monitor (PSM) uses wearable biomedical devices that combine processing functions with micro-electromechanical systems. In the final configuration, each soldier on the battlefield would wear a thin belt-like band, next to his or her body, containing biomedical sensors and a wireless local-area network for data processing. These sensors measure parameters such as temperature, heart rate, breathing rate, and mean arterial blood pressure. Other equipment - a Global Positioning System (GPS) receiver, spread-spectrum radio, controller and battery packs - is integrated with the standard load-bearing equipment, with a wristworn display showing time and location. The remainder of the system includes central PSM command units based on laptop computers, handheld units carried by combat medics, and communications links.

PSM provides the ability to locate and identify all friendly forces on the battlefield, thereby enhancing situational awareness and reducing the risk of fratricide. The command unit displays whether given individuals are dead or alive, and gives details of their physiological state. This allows medical attention to be directed quickly and accurately to the casualties that will benefit most. The PSM then continues to provide useful information throughout evacuation and subsequent treatment.

The PSM is evolving through a series of stages, each providing additional capabilities. Initial efforts concentrated on simply indicating whether the individual was alive or dead. The second

stage, involving approximately 700 prototype units for testing at the US Army Ranger School, adds sensors to provide early warning of the onset of hypothermia. Subsequent phases involve the monitoring, recording and interpretation of physiological data, together with remote presentations of the degree of injury (both individually, and in relation to others for triage purposes).

The DataPak, which a combat medic attaches to the casualty on arrival, is a device the size of a personal stereo. It takes over responsibility for monitoring and data logging, using information that continues to be supplied by the PSM, and contains the drive and data-acquisition electronics for both invasive and non-invasive sensors. These provide readouts of parameters such as blood acidity, oxygen, carbon dioxide, lactate and glucose, together with cardiac output, heart rate, respiratory rate and blood pressure. The DataPak also contains controllers that regulate ventilators, oxygen supplies, resuscitation fluid and drug-delivery systems. The prototype generates a signal based on blood pressure to control the flow rate of an infusion pump.

The Trauma Control Module (TCM) is a small, **wearable computer** driving a head-mounted display. This allows the medic to access personal information - such as the patient's name, rank, unit, medical history and medications - from the PSM, acquire the history of vital-sign changes held by the DataPak, and run the Emergency Medical Manager (EMM) expert software system. The EMM provides "mentoring" facilities that recommend the most appropriate course of action, based on DataPak inputs and information that the medic enters by voice commands.

LSTAT is a self-contained suite of electrical and mechanical devices, fitted beneath a standard NATO casualty litter, that monitors critically injured patients during transport from the battlefield to a surgical unit and thence to a fixed facility. It provides oxygen, mechanical ventilation, suction and environmental control, using vehicle power supplies or batteries. With its canopy in place, LSTAT acts as an environmentally protected and temperature-controlled pre-operative "waiting room" as well as a post-operative intensive-care unit during evacuation. These factors are expected to result in a 5-10% reduction in battlefield mortality.

LSTAT can additionally function as the surgical platform in a roving unit such as the Armored Treatment and Transport Vehicle (ATTV). United Defense is due to supply a prototype ATTV for participation in the Task Force XXI battlefield-digitization exercise during the spring of 1997. The ATTV, derived from the Bradley-based Command and Control Vehicle, is seen as the successor to the M113 armoured ambulance. A production decision is due in late 1999.

WRAIR is also developing less technologically complex equipment that nevertheless can make a significant contribution to patient survival. These include a miniature intravenous resuscitation pump, designed to replace gravity-driven drips, to reverse shock by delivering fluids at a rate matched to the casualty's blood pressure, volume and content. The disposable battery-operated, servo-controlled pump, which weighs less than 300g, delivers up to 180ml/min. Such a device may eventually be issued to every soldier on the battlefield, together with 1 litre of resuscitation fluid. WRAIR is developing algorithms for a closed-loop system that would deliver the appropriate amount, and determine whether bleeding is under control, when trained personnel are not available.

The walls of the intravenous catheter used to deliver fluids could contain miniature sensors to measure blood characteristics, thereby avoiding the need for a second puncture and providing additional data for the closed-loop mechanism. Candidate approaches include the use of fibre-optic sensors, and elements fabricated from conductive polymers. WRAIR has also built and evaluated miniature glucose sensors.

Other initiatives within the T-Med program include the Mobile

Medical Mentoring (M3) vehicle and the Digital Field Hospital. The M3 is a HMMWV (High Mobility Multi-purpose wheeled Vehicle) carrying a shelter that contains imaging workstations and communications facilities to permit "tailgate telemedicine". The Digital Field Hospital involves the addition of appliques to provide a medical image and data-acquisition system, local-area network and a communications package to support expert consultation.

In all, ARPA is sponsoring over 20 developments that can benefit military medicine. These include the MEDFAST program, being conducted by Foster-Miller on behalf of the US Army Medical Department, to provide a "toolbox" of casualty care and treatment modules that can be installed in a vehicle with stretcher mounts or cargo tie-down points. The US Department of Energy's Pacific Northwest Laboratory (PNL), in collaboration with the Madigan Army Medical Center, is developing an Advanced Imaging System (AIMS) that uses ultrasound to locate and monitor internal injuries. The equipment will generate three-dimensional images in real time, showing biological damage such as internal bleeding and locating bullets or fragments lodged in the body. AIMS could form the field end of a remote diagnosis system, either in its own right or as part of a critical-care trauma pod such as LSTAT.

Under another ARPA contract, SRI International is developing a battlefield version of its Telepresence Surgery System that will allow combat surgeons to operate on patients without being physically present. This is expected to result in a 20-40% reduction in deaths from bleeding that have historically occurred before definitive treatment was available. A Remote Surgical Unit (RSU), positioned above the operating table, contains the instruments, manipulators and stereographic cameras. The RSU is connected by wire, optical cable, microwave or satellite link to the Telesurgeon's Console. The surgeon, looking down into a stereo image of the wound, sees his remote instruments as he carries out the operation. Specially developed surgical telemanipulators and feedback mechanisms allow him to feel tissues as they are touched, and the tug on a suture, as he would in a conventional operation.

Northrop Grumman's Advanced Technology and Development Center has signed a five-year co-operative agreement with ARPA to exploit combat-aircraft technologies in developing the Operating Environment of the Future (OEF), incorporating a virtual-reality surgical training system. The OEF has three main components. The Smart Surgical System monitors a patient's physiological condition, using non-invasive sensors built into a table, and transmit the data over wireless link to an Intuitive Display and Command System (IDACS). This interactive system, activated by voice or via a touch-screen, provides the surgeon with information in an easily understood format. It can also link with doctors at other locations, allowing them to observe procedures or provide additional information.

The surgeon can retrieve medical records and gain access to supporting information, including data generated by the Intelligent Virtual Patient Environment (IPVE). This consists of an "intelligent" mannequin, surgical instruments and displays that allow the surgeon to see replications of a particular disease or wound. He or she can then "operate" on the mannequin and view the results in virtual reality. Ethicon Endo-Surgery, a Johnson & Johnson company that is teamed with Northrop Grumman on the OEF program, is already developing a similar commercial virtual-reality surgical training system.

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#### Photograph:

Northrop Grumman, working with the US Army, is developing a self-contained miniature intensive-care unit under ARPA's Life Support for Trauma and Transport (LSTAT) program. LSTAT will stabilize patients while they are transported by ground vehicles or helicopters, such as the UH-60Q medevac version of the Sikorsky Black Hawk illustrated here. The US Army National Guard is providing US\$17 million for a two-year evaluation of the UH-60Q. Specialized facilities include accommodation for up to six stretchers in an environmentally controlled cabin, on-board oxygen generation,

Ginger R. DeMille

equipment for patient monitoring and treatment, an electrically powered rescue hoist, two 230-gallon external fuel tanks, upgraded avionics linked by a MIL-STD-1553B databus, and a forward-looking infrared (FLIR) set. (Northrop Grumman)

Photograph:

SAIC has developed a rugged, portable medical system based on the V2A1 variant of its Lightweight Computer Unit (LCU) to support triage and telemedicine applications. Blood pressure, electrocardiogram and pulse oximetry (the amount of oxygen in the blood) are measured non-invasively, with outputs being managed and displayed in an easily understood format on the computer screen. The resulting data may also be transmitted over standard military communications facilities. The addition of a real-time video card providing freeze-frame capture allows images of wounds to be passed on to higher echelons for consultation. SAIC is studying further developments, using the V2A2 variant based on a 90MHz Pentium chip. This would add colour displays and Doppler ultrasound facilities. (SAIC)

Photograph:

French United Nations troops carry a wounded soldier to a waiting helicopter at Sarajevo in August 1995. (EPA)

Photograph:

The Personnel Status Monitor, currently being developed by the Defense Healthcare Technologies Program at ARPA (Advanced Research Projects Agency). In the final configuration, the soldier would wear a thin belt containing biomedical sensors and a wireless local-area network. (ARPA/SARCOS)

Photograph:

The broadening of the Dutch armed forces' responsibilities and the ensuing creation of an air-mobile brigade led to a requirement for a lightweight, modular field hospital that could be assembled and ready for use within 90min of arriving on-site. The Royal Netherlands Army has ordered four such units from Fokker Special Products, for delivery between mid-1997 and the end of 1998.

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PLEASE ENTER A COMMAND OR BE LOGGED OFF IN 5 MINUTES

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? t3/3,k/all

**3/3,K/1 (Item 1 from file: 587)**

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10884335 Word Count:297

**US Army's small UAVs project**

JANE'S DEFENCE WEEKLY (JDW) JUNE 21, 2000 v.033 no. 025

Section Heading: AMERICAS, THE

By: Andrew Koch JDW Staff Reporter

...capability for an individual soldier to control it and download data through the use of **wearable computers**. Those computers are part of the army's programme to develop the Land warrior, a...

**3/3,K/2 (Item 2 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace  
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10883751 Word Count:239

**US Marine Corps tests wearable computer**

INTERNATIONAL DEFENSE REVIEW (IDR) JUNE 01, 2000 v.033 no. 006

Section Heading: DEFENSE ELECTRONICS AND COMPUTING

**US Marine Corps tests wearable computer**

**3/3,K/3 (Item 3 from file: 587)**

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10878669 Word Count:495

**Computer is now part of the US soldier's uniform**

JANE'S DEFENCE WEEKLY (JDW) DECEMBER 01, 1999 v.032 no. 022

Section Heading: UPDATE

By: ANDREW KOCH JDW Staff Reporter\Washington DC

...displays.

Developed by the US Defence Advanced Research Projects Agency (DARPA), the systems are called **wearable computers** and consist of brick-sized units that attach like belts, weigh 29 ounces (822g) and...

...the US Special Operations Command on equipment for missions such as combat air control. Specialised **wearable computers** have been made for teams of five to six air/ground traffic controllers that are dropped behind enemy lines with special operations forces to clandestinely secure and use airfields.

The **wearable computers** provide controllers the ability to quickly recall large volumes of contingency plans, maps, diagrams and...

**3/3,K/4 (Item 4 from file: 587)**

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10858456 Word Count:5559

**TECHNICAL FEATURES - Snipers fire at their peril Detection technologies permit\ - rapid counter-fire\**

INTERNATIONAL DEFENSE REVIEW (IDR) JULY 01, 1997 p. 30 v.30 no. 07

By: Mark Hewish - Rupert Pengelley\

...Other elements include a magnetometer-based heading sensor, differential Global Positioning System (DGPS) receiver, and **wearable computer**. In all three cases, BBN says that it is still searching for units that are...



**3/3,K/5 (Item 5 from file: 587)**  
DIALOG(R)File 587:Jane's Defense&Aerospace  
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10854067 Word Count:950  
**CI - Infosyst's joint level mission for Sweden\**  
JANE'S DEFENCE WEEKLY, INTERNATIONAL EDITION (JDW) MARCH 05, 1997 p. 26  
v.27 no. 09  
By: Janssen Lok

...which is analogous to  
the US Army's Soldier Modernization Programme.

Several concepts, such as **wearable computers**, wireless local area networks, and VR helmets are part of this project. Helmets have already...

**3/3,K/6 (Item 6 from file: 587)**  
DIALOG(R)File 587:Jane's Defense&Aerospace  
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10851635 Word Count:4540  
**FEATURE - WEARABLE INFORMATION TAILORED TO BATTLEFIELD\**  
INTERNATIONAL DEFENSE REVIEW (IDR) NOVEMBER 01, 1996 p. 1 v.001 no. 011  
By: Mark Hewish

...capability, and the ability to pass updated  
information from scanners to the database via the **wearable computer**.

Additional System Five applications include maintenance of F/A-18s  
aboard aircraft carriers, and explosive...

**3/3,K/7 (Item 7 from file: 587)**  
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10847193  
**INTERVIEW - THE JANE'S INTERVIEW\**  
JANE'S DEFENCE WEEKLY, INTERNATIONAL EDITION (JDW) MAY 01, 1996 p. 32 v.  
25 no. 18  
By: Barbara Starr

...radiates a signature.

SPECWARCOM is also looking at developing what Adm Smith calls "a  
flexible **wearable computer**" similar to a pilot head-up display that  
would allow a SEAL to securely send...

**3/3,K/8 (Item 8 from file: 587)**  
DIALOG(R)File 587:Jane's Defense&Aerospace  
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10847134 Word Count:2417  
**FEATURE - MILITARY MEDICINE GOES DIGITAL\**  
INTERNATIONAL DEFENSE REVIEW (IDR) MAY 01, 1996 p. 1 v.01 no. 05  
By: Mark Hewish

...the  
flow rate of an infusion pump.

The Trauma Control Module (TCM) is a small, **wearable computer**  
driving a head-mounted display. This allows the medic to access  
personal information - such as...

**3/3,K/9 (Item 9 from file: 587)**  
DIALOG(R)File 587:Jane's Defense&Aerospace

Ginger R. DeMille

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10841824

Word Count:41

**CONTRACTS AWARDED - COMPUTER SYSTEMS I\ - Intervision, USA\**

JANE'S DEFENCE WEEKLY, INTERNATIONAL EDITION (JDW) AUGUST 01, 1995 p. 9  
v.00 no. 00

UNDISCLOSED AMOUNT

From: UK MOD

To: supply a **'wearable' computer** system, System Six, to the UK  
Defence Research Agency for evaluation for British Army applications  
ie. field maintenance, reconnaissance, logistics activities.

<CP>

Photograph:

System Six, **wearable computer** system

...

**3/3,K/10 (Item 10 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace

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10840165

Word Count:297

**ELECTRONICS & INFORMATION TECHNOLOGYwearable computer offers head-up help\**

JANE'S DEFENCE WEEKLY, INTERNATIONAL EDITION (JDW) JULY 22, 1995 p. 29

v.24 no. 03

By: Vanessa Townsend

...technical data without having to carry bulky  
technical manuals.

US company Intervision has developed a **'wearable' computer** system,  
weighing just 1.6 kg, that gives the maintenance technician access  
to the equivalent...

**3/3,K/11 (Item 1 from file: 589)**

DIALOG(R)File 589:FI Defense Market Intelligence

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00011564

**SPY-1(V) (AEGIS)**

Binder: WARSHIPS

Category: NAVAL ELECTRONICS\ORIENTATION

Pub. Date: MAY 01, 1997

Source: Forecast International/DMS

Language: English

Word Count: 8963

DESCRIPTION

3D, multi-function, phased-array naval radar system. It is part of the  
AEGIS Anti-Air Warfare weapons system.

Country: UNITED STATES

Industry: AEROSPACE AND DEFENSE

Companies: LOCKHEED MARTIN, SANDERS, COMPUTER SCIENCES CORP

Sections: SPONSOR, CONTRACTORS, STATUS, TOTAL PRODUCED, APPLICATION,  
PRICE RANGE, TECHNICAL DATA, VARIANTS/UPGRADES, BACKGROUND,  
FUNDING, RECENT CONTRACTS, TIMETABLE, WORLDWIDE DISTRIBUTION,  
FORECAST

Binder Code: W

...year

procurement basis.

In the FY97 Defense Authorization, Congress added US\$3 million for  
procuring **wearable computers** for deployment on AEGIS ships as well as  
others with Interactive Electronic Technical Manuals (ITEMs...

**3/3,K/12 (Item 2 from file: 589)**  
DIALOG(R)File 589:FI Defense Market Intelligence  
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00010834

**SPY-1(V) (AEGIS)**

Binder: COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE  
Category: PROGRAMS\ORIENTATION  
Pub. Date: MAY 01, 1997  
Source: Forecast International/DMS  
Language: English  
Word Count: 8883

**DESCRIPTION**

3D, multi-function, phased-array naval radar system. It is part of the AEGIS Anti-Air Warfare weapons system.

Country: UNITED STATES  
Industry: AEROSPACE AND DEFENSE  
Companies: LOCKHEED MARTIN, SANDERS, COMPUTER SCIENCES CORP  
Sections: SPONSOR, CONTRACTORS, TOTAL PRODUCED, APPLICATION, PRICE RANGE  
, TECHNICAL DATA, VARIANTS/UPGRADES, BACKGROUND, FUNDING,  
RECENT CONTRACTS, TIMETABLE, WORLDWIDE DISTRIBUTION, FORECAST  
Binder Code: C3

...year  
procurement basis.

In the FY97 Defense Authorization, Congress added US\$3 million for procuring **wearable computers** for deployment on AEGIS ships as well as others with Interactive Electronic Technical Manuals (ITEMS...

**3/3,K/13 (Item 3 from file: 589)**  
DIALOG(R)File 589:FI Defense Market Intelligence  
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00000052

**SPY-1(V) (AEGIS)**

Binder: ELECTRONIC SYSTEMS  
Category: DEFENSE PROGRAMS\ORIENTATION  
Pub. Date: MAY 01, 1997  
Source: Forecast International/DMS  
Language: English  
Word Count: 8962

**DESCRIPTION**

3D, multi-function, phased-array naval radar system. It is part of the AEGIS Anti-Air Warfare weapons system.

Country: UNITED STATES  
Industry: AEROSPACE AND DEFENSE  
Companies: LOCKHEED MARTIN, SANDERS, COMPUTER SCIENCES CORP  
Sections: SPONSOR, CONTRACTORS, STATUS, TOTAL PRODUCED, APPLICATION,  
PRICE RANGE, TECHNICAL DATA, VARIANTS/UPGRADES, BACKGROUND,  
FUNDING, RECENT CONTRACTS, TIMETABLE, WORLDWIDE DISTRIBUTION,  
FORECAST  
Binder Code: ES

...year  
procurement basis.

In the FY97 Defense Authorization, Congress added US\$3 million for procuring **wearable computers** for deployment on AEGIS ships as well as

Ginger R. DeMille

others with Interactive Electronic Technical Manuals (ITEMS...  
?

? t7/3,k/all

7/3,K/1 (Item 1 from file: 587)

DIALOG(R)File 587:Jane's Defense&Aerospace  
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10847134 Word Count:2417

FEATURE - MILITARY MEDICINE GOES DIGITAL\

INTERNATIONAL DEFENSE REVIEW (IDR) MAY 01, 1996 p. 1 v.01 no. 05

By: Mark Hewish

...Peat Marwick, in conjunction with Apple Computers, has developed software that provides access to patients' **medical records** and laboratory results over wireless links via Apple Newton handheld computers. MediTag is a portable...the flow rate of an infusion pump.

The Trauma Control Module (TCM) is a small, **wearable computer** driving a head-mounted display. This allows the medic to access personal information - such as...other locations, allowing them to observe procedures or provide additional information.

The surgeon can retrieve **medical records** and gain access to supporting information, including data generated by the Intelligent Virtual Patient Environment...

7/3,K/2 (Item 2 from file: 587)

DIALOG(R)File 587:Jane's Defense&Aerospace  
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10841821 Word Count:69

CONTRACTS AWARDED - COMPUTER SYSTEMS |\ - Intervision, USA\

JANE'S DEFENCE WEEKLY, INTERNATIONAL EDITION (JDW) AUGUST 01, 1995 p. 9  
v.00 no. 00

UNDISCLOSED AMOUNT

From: US Army Medical Research Centre Walter Reed  
To: supply a **wearable computer** system, System Six, that provides the military medical attendant or non-medical personnel with access to the best **medical information** and expertise available. weighing just 1.6 kg, the Emergency **Medical Information** System allows the attendant to have their hands free to perform the necessary medical treatment...

7/3,K/3 (Item 3 from file: 587)

DIALOG(R)File 587:Jane's Defense&Aerospace  
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10840165 Word Count:297

ELECTRONICS & INFORMATION TECHNOLOGYwearable computer offers head-up help\

JANE'S DEFENCE WEEKLY, INTERNATIONAL EDITION (JDW) JULY 22, 1995 p. 29  
v.24 no. 03

By: Vanessa Townsend

...technical data without having to carry bulky technical manuals.

US company Intervision has developed a **wearable computer** system, weighing just 1.6 kg, that gives the maintenance technician access to the equivalent...

...monitors providing the military medical attendant or non-medical personnel with access to the best **medical information** and expertise available;

- a mini digital video camera, useful in damage control or reconnaissance. Collected...

?

? t9/7/

9/7/1 (Item 1 from file: 587)

DIALOG(R)File 587:Jane's Defense&Aerospace

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10878917

Word Count:4614

**Stemming the flow: reducing the rate of combat casualties**

INTERNATIONAL DEFENSE REVIEW (IDR) (DECEMBER 01, 1999 v.032 no. 012

Section Heading: FEATURES

By: MARK HEWISH | \JORIS JANSSEN LOK

#### MOBILE FIELD HOSPITALS

Half of battlefield deaths are the result of uncontrolled bleeding. This figure has not changed for over a century. Faced with increasing public pressure, the military is focusing its attention on all methods of reducing combat casualties. Many could be prevented if medical staff had access to equipment standard in hospitals. However, this has historically been unavailable to them because it is too large, heavy and power-hungry. Lighter equipment can be deployed further forward, increasing the likelihood of survival, and is higher up the list of priorities when airlift capacity is being allocated.

In addition to conventional warfighting, the military must also be prepared to provide massive emergency aid in case of natural or man-caused disasters. This type of humanitarian aid and disaster relief has received increasing emphasis over the past years. However, the main focus is on peace-supporting operations of the kind that have been taking place in Bosnia and Kosovo since 1995 (with the deployments of IFOR/SFOR and KFOR, respectively).

According to information provided by the Netherlands Ministry of Defense, a typical field hospital for peacekeeping/peace enforcing operations has to be capable of processing up to 600 casualties over three to five days. NATO requirements call for the presence of 16 operating theaters if a division-sized unit (three brigades) is deployed. That means that a deployed brigade should be supported by a minimum of five operating theaters, usually provided by means of one or more deployed field hospitals.

#### Saving life and limb

The goal of resuscitative (or staged) surgery is to achieve the most efficient use of life- and limb-saving procedures to stabilize patients so they can be evacuated for more specialized and longer-term care in rear areas. This approach was first implemented during the Second World War, but the facilities available for deployment on the battlefield have tended to be spartan in nature. The introduction of new design concepts, coupled with advanced technology, is bringing about radical changes. Small facilities staffed by highly trained personnel can now provide the level of care necessary, while maintaining a high throughput. Contributing

factors include the use of composite materials, miniaturized equipment, telemedicine, hand-held satellite communications, digital diagnostics, wireless patient monitoring and computer-based 'medical anchor desks'.

The US Army has launched a Medical Reengineering Initiative (MRI) to improve the mobility of its field medical units and reduce the logistics burden, while enhancing the services available. The MRI will introduce a new modular surgical hospital that can be tailored to contingencies, replacing many of those in service. The first nine MRI units are due to be activated during this fiscal year. At least a corps slice should be in service by Fiscal Year 2004 (FY04), with conversion being complete by FY07.

The change in structure will be accompanied by the introduction of new equipment and procedures. The Combat Casualty Care Research Program conducted by the service's Medical Research and Materiel

Command (MRMC) emphasizes the delivery of immediate, far-forward and en-route care for soldiers sustaining life-threatening injuries on the battlefield. It includes development of the drugs and techniques needed to counter haemorrhage and shock, treat wounds and burns, and provide new blood products and substitutes. Recent developments include a portable ventilator, weighing about 2.3kg, that incorporates feedback sensors to measure the parameters necessary for auto-regulation of its settings. The ventilator operates through an artificial intelligence neural network without operator input, allowing it to adapt to each patient's requirements. A new ceramic oxygen generator will remove the need for oxygen cylinders on the battlefield and provide a more idealized and controlled delivery system for individual patients during transport. Other initiatives include:

- UH-60Q Black Hawk air ambulances, production funding for which begins in FY02. The US Army hopes to acquire 117 to equip Force Package One by 2012 and an additional 75 for Force Package Two by 2016;

- the Armored Medical Evacuation Vehicle (AMEV). This would replace M113 armored ambulances in heavy battalions, allowing combat medics to keep pace with armored fighting vehicles. A prototype successfully took part in maneuvers at the National Training Center (NTC) earlier this year. The AMEV can carry four patients on litters, plus another four ambulatory cases, together with oxygen, suction and standard medical supplies. Development is funded through FY00, but procurement has not been authorized. If given the go-ahead, production of up to 675 AMEVs could begin in 2002;

- the Armored Medical Treatment Vehicle (AMTV), which has also undergone recent testing at the NTC. This would provide a protected trauma-treatment workspace in direct support of heavy forces, replacing the M577 battalion aid station. Development is virtually complete but procurement remains unfunded;

- Life Support for Trauma and Transport (LSTAT), a mobile miniature intensive-care unit weighing just over 60kg for use near the front line. Four prototypes are under evaluation by the Walter Reed Army Medical Center and other organizations. The design could be fully developed within two years. LSTAT contains all the medical equipment, sensors and devices necessary to monitor critically injured patients, and supports surgical treatment with anaesthesia. Planned enhancements include an air-handling system to permit treatment of chemically contaminated patients;

- MRMC, Medical Command and the American Red Cross have collaborated on development of a dry fibrin sealant bandage that can reduce blood loss by 50-85%. This uses two coagulating proteins, freeze-dried on to an absorbent backing;

- The US Army recently awarded Informatel a US\$34 million contract to supply up to two million Personal Information Carriers (PICs) incorporating a controller and a **SanDisk** flash memory that can store 8Mbytes of data (increasing to 96Mbytes next year). The PIC acts as a 'dog-tag' containing the wearer's medical record. The eventual objective is to replace paper medical records, film images and analog audio/video recordings;

- The US Army's Medical Communications for Combat Casualty Care (MC4) program focuses on digitization for battlefield operations. Under a recent US\$5 million contract, Harris RF Communications Division will supply its AN/PRC-138B Falcon II HF/VHF radios to equip 33 combat medical units. A wireless e-mail facility allows the sets to support telemedicine applications. The US armed forces are also sponsoring development of other new medical technologies. ATL Ultrasound, with funding from the Office of Naval Research and the Defense Advanced Research Projects Agency, has developed a handheld ultrasound scanner that can provide images of internal organs and indicate sites of internal bleeding. Prototype devices are under evaluation in civilian and military hospitals. The US Army's most recent Small Business Innovation

Research (SBIR) solicitation includes several projects. One of these relates to a lightweight, compact oxygen generator for use in forward medical treatment areas and casualty transport vehicles. The electrically powered device would produce oxygen that is 99% pure by concentrating atmospheric oxygen or decomposing water. Another seeks to develop a local hemostatic bandage that is as effective as those using fibrinogen but is far less costly.

Additional SBIR efforts focus on lightweight, rugged, non-invasive sensors. One such device could be worn or applied to the skin to measure the concentration of serum lactate in tissues. This would assist combat medics in determining which patients are suffering from severe blood loss, and therefore require fluid resuscitation, without having to draw a sample. Non-invasive methods of evaluating cardiac output and blood pressure by measuring thoracic impedance are already available but employ low-level electrical signals that are affected by electromagnetic interference and motion. The US Army is therefore attempting to identify an accurate method of measuring cardiac output non-invasively using a device that is not susceptible to these effects.

MRMC's Combat Casualty Care Research program originated the concept of an Advanced Surgical Suite for Trauma Casualties (ASSTC). This comprises a small, self-contained 'hospital in a box' that allows the most severely wounded casualties to undergo treatment in forward areas of the battlefield. The US Marine Corps (USMC) Combat Development Command took delivery of the first prototype ASSTC in October 1997, only nine months after the design concept was established. The service's Warfighting Lab has since conducted field trials at Fort Bragg and Camp Lejeune. In May 1998, several former US Army medical personnel who had been closely involved with originating the ASSTC concept established a company, Tactical Medical Solutions (TMS), to build the suite and derivatives of it.

The USMC seems unlikely to place a production order for the ASSTC, although individual units have expressed interest in funding procurements for their own use. Earlier this year, the US Congress allocated US\$8 million of FY00 funding to buy about 30 ASSTCs to equip the National Guard, which will use them in both military and disaster-relief applications.

TMS is enlarging and refining the design, originally sized for internal carriage by the USMC's MV-22 Osprey tilt-rotor aircraft. It is being lengthened to allow the use of two operating tables (rather than one in the prototype) and an anaesthesia station; reducing the weight by 180kg; incorporating an integral water supply; and adopting hydraulic jacks that enable four personnel, rather than 10, to erect the structure in less than 30min (16min was achieved during developmental testing).

The ASSTC's structure consists of a tent constructed from an ultra-lightweight fabric, with an integral collapsible aluminum framework, attached to the top of an expandable container. The baseline design weighs 1,361kg unstocked, with the self-contained supplies and equipment adding 453kg. The unit collapses to fit in a box measuring 1.87 x 1.37 x 3.05m, and expands to form a room 3.86m wide by 3.05m long and 2.43m tall. The tent is 9.134m in diameter and 3.96m tall when deployed around the expanded structure, providing a working area of approximately 65m<sup>2</sup> for triage and surgery. The ASSTC can be towed on a trailer behind a HMMWV light utility vehicle and can be transported by helicopter or airlifter (including parachute delivery). The baseline design is laid out for 10 medical personnel, with an efficient patient flow pattern for triage, resuscitative surgery, post-operative care, and temporary patient holding. Alternatively, the ASSTC can function as a 20-bed hospital. Several such units may be interconnected to form large facilities.

Halogen surgical and fluorescent triage lights are standard. Options include mobile electric power (the unit requires a minimum of 15kw), patient-monitoring and telemedicine equipment, PDX-2000 digital radiography system, Micro-Paq field anaesthesia unit (which weighs a mere 3.6kg), electronic infusion pump and medical anchor desk (MAD).



The Infusion Dynamics Power Infuser, that weighs only 250g, is said to be the first portable electronic infusion pump designed specifically for life-saving delivery of intravenous (IV) fluids. Unlike traditional units, which administer medications at rates of a few milliliters per hour, the Power Infuser can deliver crystalloid or colloid IV fluids at rates of several liters per hour to restore blood pressure and intravascular volume.

The MAD permits management of all ASSTC functions from a single location. It can monitor fuel and water supplies, control heating and cooling, provide situational-awareness information such as weather reports and maps, handle communications networks, and track use of materials and remaining supplies. The MAD can also monitor multiple patients, update their records and track their treatment. TMS works closely with BioAsyst, which is developing several unique life-support devices. These include the mini-STAT, the Support and Evacuation Platform, and diagnostic equipment and devices.

The USMC's 'Urban warrior' advanced warfighting exercise in March included use of a portable field hospital based on the Mobile Expandable Container Configuration (MECC) shelter. This accommodates a surgical area, six beds and all the supplies needed for treatment. An additional area with cots on the side of the shelter, where patients can recover after receiving medical care, allows the facility to handle up to 50 major traumatic injuries and about 100 minor wounds.

The MECC, which costs around US\$45,000, collapses to 6 x 2.5m for transport and can be set up in 10min on arrival. 'Urban warrior' also included testing of an experimental Digital Analog Recognition Phonetic Analyzer for use during humanitarian assistance operations in areas where English is not spoken. The device, worn around a corpsman's waist, translates what the patient is saying and transmits the output to the user's headphones.

The US Army Research Institute of Environmental Medicine is working with FitSense Technology to develop mobile physiological monitoring systems that are small, lightweight and rugged enough for field use. The core infrastructure technology for the FitSense systems is the BodyLAN - a wireless, low-power, near-field digital network that allows signals from multiple sensors to be moved around the body without interference. In a recent training exercise conducted by the USMC, the company's Vital Signs Monitor simultaneously tracked eight body parameters - including heart rate, caloric burn, sleep time, location (obtained via a GPS receiver) and temperature - on 15 individuals for 10 days. The wearable, wireless system logs sensor data and telemeters them to a data center.

FitSense has also developed a Body Core Temperature Monitor (BCTM) consisting of an instrumented pill the size of a jelly-bean, which the user swallows, and a pager-sized receiver. The COR-100 pill contains a miniature thermometer, accurate to 0.05°C, and a transmitter. The BCTM can take four readings a minute and store them for 14 days.

The US Air Force (USAF) is undergoing a similar process of re-organization and introducing new equipment. In April it conducted the first deployment of its new expeditionary medical squadrons when personnel based in Germany relocated to Albania to support NATO operations against Yugoslavia. Each squadron has 22 personnel - including teams providing preventive medicine, critical care and mobile field surgery - working in an air-transportable clinic. All the equipment, from the tents to the medical apparatus, fits on one pallet. The service is also upgrading its eight Air Transportable Hospitals (ATHs) for operation in the presence of chemical agents. The addition of an impermeable liner to the tent material avoids the need for technicians to wear cumbersome protective suits. The ATH is a 50-bed, self-contained mobile hospital that can be deployed by airlifter to provide medical support to a force of 4,000 personnel for 30 days without resupply. Three sizes of add-on unit - with 10, 14 and 25 beds - are available to meet different contingencies.

The USAF is additionally improving patient care aboard the C-17 airlifters of its aeromedical evacuation squadron by increasing the space between litters from 40cm to 53cm, which gives medical staff easier access to patients and equipment. Other improvements have been made to the litter arms, utility panel, oxygen lines, stanchions, and overall set-up and stowage procedures. The new, three-tier litter system allows the aircraft to accommodate up to 36 littered patients and 48 ambulatory patients.

In May, the Air Force Research Laboratory's Directed Energy Directorate and Fiber Optic Fabrications signed a co-operative R&D program to produce a multirole infrared laser. The compact, battery-operated device will have several military applications, including acting as a 'laser scalpel' for emergency battlefield surgery and illuminating targets for viewing through night-vision goggles. The directorate's Laser Applications Branch is contributing experience gained during development of the earlier Medpac unit. Fiber Optic Fabrications is adding its expertise in highly effective lasers and in fiber-optic systems that can efficiently carry laser energy. The company is also working with CeramOptec on a family of diode laser systems with power outputs of 15W, 25W and 50W. Their operating wavelength of 980 nanometers reacts well with body tissue when used in medical applications.

One US company specializing in the production of lightweight transportable shelters and the integration of fully-equipped multi-shelter complexes is Marion Composites of Virginia, a division of Advanced Technical Products. The company's Relocatable Hospital System is tailored to customers' specific needs and basic medical modules available include pre-op, operating room, ward, emergency receiving, pharmacy/lab/x-ray, power generation/water pumping, post-op, central material supply, dental, kitchen, laundry and others.

Arguably the largest field hospital program in Europe is that for the German armed forces (Bundeswehr), carried out by DaimlerChrysler Aerospace (Dasa)-subsidiary Dornier GmbH of Friedrichshafen. The company has been working throughout the 1990s on the development of its TransHospital concept for containerized, mobile field hospitals (MFHS), capable of maintaining a "complete medical infrastructure under the most extreme climatic and hygiene conditions". During the second half of the 1990s, Dornier has delivered a containerized medical clearing station, a first modular field hospital (63 containers) and a first field hospital for crisis reaction forces (47 containers) under turn-key projects for the German defense procurement agency, BWB.

The TransHospital concept is a combination of containers and tents, and covers at least four scopes of performance: lifesaving emergency treatment; general surgery and internal treatment; extended specialist treatment; and final treatment. The concept uses laterally expandable ISO-standard containers that are quickly connectable to each other to form fully functional medical units.

The containers can be transported without difficulty by trailer, truck, aircraft (C-130/C-160 and larger), helicopter, rail or ship. TransHospital units are claimed to be fully autonomous as all items required for medical care are carried-on; NBC protection can be provided for a duration of at least three hours; and each container is equipped with an individual air-conditioning set. Using a Lego-like building block system, TransHospital units can be easily extended with specialist sections (internal medicine, eyes, urology, gynaecology, dermatology/phlebology, orthopaedics, neurology and/or others), laboratories (clinical-chemical, medicine research, food chemistry and water, veterinary medicine, microbiology and hygiene) or diagnostic areas (radiodiagnostics and/or computertomography).

At the operational location, the self-contained, air-tight TransHospital container units can be ready for use within 15-60min, depending on the container type. Exercises by the German Army have shown that a 7-part segment surgery/intensive care unit can be fully operational within 14 hours; a full Mobile Rescue Center (MRC) within 16.5-18 hours.

Basic components are a reception and emergency ward, shock treatment

unit, surgery and intensive care/recovery; support functions such as a pharmacy, sanitary supplies and pathology, and a number of general facility engineering units, including a satellite communications unit to support telemedicine operations.

Dornier documentation shows a three-stage concept of TransHospital emergency services. Lifesaving immediate treatment would be provided by what Dornier calls Mobile Rescue Stations (MRSSs), consisting of a single TransHospital container unit, and several tented accommodation and support units located about 10km from the area of incident. In the second stage, general surgical and internal treatment would be provided in an MRC approximately 20-30km to the rear, comprising of around 25 container units accommodation tents for major and minor injuries, and other support tents. Finally, another 30-50km away, there would be a full MFH where extensive medical treatment could be provided on the scale of a regular hospital.

According to Dornier, the Bundeswehr is planning to procure two MFHS (to equip the joint emergency and medical service; 33 MRSSs, 10 MRCs and two MFHS to equip the army; 18 MRSSs and three MRCs to equip the air force; and two ship-borne MRCs to equip the navy, all to be delivered by 2008. So far, at least two complete field hospitals and six MRSSs have been delivered. TransHospital was selected by the United Arab Emirates last year and is also being considered by the Greek Army.

German company Zeppelin Mobile Systems is offering field hospital solutions based on its MobilMediCare concept that makes use of 20ft ISO-standard shelters, again expandable to create extra floorspace.

In the Czech Republic, Ego Zlin Ltd produces life-saving medical systems for field use, including vacuum fixation splints and vacuum mattresses for whole-body fixation, and transport stretchers. In addition, the Czech company offers mobile hospital accommodation in the shape of inflatable tents, which can be used to erect a fully-equipped hospital, a chemical laboratory unit or a decontamination station. Ego Zlin says it has exported its products to over 30 nations, with customers including the military as well as civilian rescue services.

In November, the Royal Netherlands Army took delivery of the first of four MFH units. Known as MOGOS (a Dutch acronym for mobile medical operating theater system), the system is made by Fokker Special Products, a division of Stork Aerospace, which in turn is part of the Dutch engineering group Stork.

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Ginger R. DeMille

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SPECIAL FEATURE:

Photograph

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14/5/1 (Item 1 from file: 587)

DIALOG(R)File 587:Jane's Defense&Aerospace

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**Stemming the flow: reducing the rate of combat casualties**

INTERNATIONAL DEFENSE REVIEW (IDR) DECEMBER 01, 1999 v.032 no. 012

Section Heading: FEATURES

By: MARK HEWISH |JORIS JANSSEN LOK

#### MOBILE FIELD HOSPITALS

Half of battlefield deaths are the result of uncontrolled bleeding. This figure has not changed for over a century. Faced with increasing public pressure, the military is focusing its attention on all methods of reducing combat casualties. Many could be prevented if medical staff had access to equipment standard in hospitals. However, this has historically been unavailable to them because it is too large, heavy and power-hungry. Lighter equipment can be deployed further forward, increasing the likelihood of survival, and is higher up the list of priorities when airlift capacity is being allocated.

In addition to conventional warfighting, the military must also be prepared to provide massive emergency aid in case of natural or man-caused disasters. This type of humanitarian aid and disaster relief has received increasing emphasis over the past years. However, the main focus is on peace-supporting operations of the kind that have been taking place in Bosnia and Kosovo since 1995 (with the deployments of IFOR/SFOR and KFOR, respectively).

According to information provided by the Netherlands Ministry of Defense, a typical field hospital for peacekeeping/peace enforcing operations has to be capable of processing up to 600 casualties over three to five days. NATO requirements call for the presence of 16 operating theaters if a division-sized unit (three brigades) is deployed. That means that a deployed brigade should be supported by a minimum of five operating theaters, usually provided by means of one or more deployed field hospitals.

#### Saving life and limb

The goal of resuscitative (or staged) surgery is to achieve the most efficient use of life- and limb-saving procedures to stabilize patients so they can be evacuated for more specialized and longer-term care in rear areas. This approach was first implemented during the Second World War, but the facilities available for deployment on the battlefield have tended to be spartan in nature. The introduction of new design concepts, coupled with advanced technology, is bringing about radical changes. Small facilities staffed by highly trained personnel can now provide the level of care necessary, while maintaining a high throughput. Contributing factors include the use of composite materials, miniaturized equipment, telemedicine, hand-held satellite communications, digital diagnostics, wireless patient monitoring and computer-based 'medical anchor desks'.

The US Army has launched a Medical Reengineering Initiative (MRI) to improve the mobility of its field medical units and reduce the logistics burden, while enhancing the services available. The MRI will introduce a new modular surgical hospital that can be tailored to contingencies, replacing many of those in service. The first nine MRI units are due to be activated during this fiscal year. At least a corps slice should be in service by Fiscal Year 2004 (FY04), with conversion being complete by FY07.

The change in structure will be accompanied by the introduction of new equipment and procedures. The Combat Casualty Care Research Program conducted by the service's Medical Research and Materiel Command (MRMC) emphasizes the delivery of immediate, far-forward and

en-route care for soldiers sustaining life-threatening injuries on the battlefield. It includes development of the drugs and techniques needed to counter haemorrhage and shock, treat wounds and burns, and provide new blood products and substitutes. Recent developments include a portable ventilator, weighing about 2.3kg, that incorporates feedback sensors to measure the parameters necessary for auto-regulation of its settings. The ventilator operates through an artificial intelligence neural network without operator input, allowing it to adapt to each patient's requirements. A new ceramic oxygen generator will remove the need for oxygen cylinders on the battlefield and provide a more idealized and controlled delivery system for individual patients during transport. Other initiatives include:

- UH-60Q Black Hawk air ambulances, production funding for which begins in FY02. The US Army hopes to acquire 117 to equip Force Package One by 2012 and an additional 75 for Force Package Two by 2016;
- the Armored Medical Evacuation Vehicle (AMEV). This would replace M113 armored ambulances in heavy battalions, allowing combat medics to keep pace with armored fighting vehicles. A prototype successfully took part in maneuvers at the National Training Center (NTC) earlier this year. The AMEV can carry four patients on litters, plus another four ambulatory cases, together with oxygen, suction and standard medical supplies. Development is funded through FY00, but procurement has not been authorized. If given the go-ahead, production of up to 675 AMEVs could begin in 2002;
- the Armored Medical Treatment Vehicle (AMTV), which has also undergone recent testing at the NTC. This would provide a protected trauma-treatment workspace in direct support of heavy forces, replacing the M577 battalion aid station. Development is virtually complete but procurement remains unfunded;
- Life Support for Trauma and Transport (LSTAT), a mobile miniature intensive-care unit weighing just over 60kg for use near the front line. Four prototypes are under evaluation by the Walter Reed Army Medical Center and other organizations. The design could be fully developed within two years. LSTAT contains all the medical equipment, sensors and devices necessary to monitor critically injured patients, and supports surgical treatment with anaesthesia. Planned enhancements include an air-handling system to permit treatment of chemically contaminated patients;
- MRMC, Medical Command and the American Red Cross have collaborated on development of a dry fibrin sealant bandage that can reduce blood loss by 50-85%. This uses two coagulating proteins, freeze-dried on to an absorbent backing;
- The US Army recently awarded Informatel a US\$34 million contract to supply up to two million **Personal Information Carriers** (PICs) incorporating a controller and a SanDisk flash memory that can store 8Mbytes of data (increasing to 96Mbytes next year). The PIC acts as a 'dog-tag' containing the wearer's medical record. The eventual objective is to replace paper medical records, film images and analog audio/video recordings;
- The US Army's Medical Communications for Combat Casualty Care (MC4) program focuses on digitization for battlefield operations. Under a recent US\$5 million contract, Harris RF Communications Division will supply its AN/PRC-138B Falcon II HF/VHF radios to equip 33 combat medical units. A wireless e-mail facility allows the sets to support telemedicine applications. The US armed forces are also sponsoring development of other new medical technologies. ATL Ultrasound, with funding from the Office of Naval Research and the Defense Advanced Research Projects Agency, has developed a handheld ultrasound scanner that can provide images of internal organs and indicate sites of internal bleeding. Prototype devices are under evaluation in civilian and military hospitals. The US Army's most recent Small Business Innovation Research (SBIR) solicitation includes several projects. One of these

relates to a lightweight, compact oxygen generator for use in forward medical treatment areas and casualty transport vehicles. The electrically powered device would produce oxygen that is 99% pure by concentrating atmospheric oxygen or decomposing water. Another seeks to develop a local hemostatic bandage that is as effective as those using fibrinogen but is far less costly.

Additional SBIR efforts focus on lightweight, rugged, non-invasive sensors. One such device could be worn or applied to the skin to measure the concentration of serum lactate in tissues. This would assist combat medics in determining which patients are suffering from severe blood loss, and therefore require fluid resuscitation, without having to draw a sample. Non-invasive methods of evaluating cardiac output and blood pressure by measuring thoracic impedance are already available but employ low-level electrical signals that are affected by electromagnetic interference and motion. The US Army is therefore attempting to identify an accurate method of measuring cardiac output non-invasively using a device that is not susceptible to these effects.

MRMC's Combat Casualty Care Research program originated the concept of an Advanced Surgical Suite for Trauma Casualties (ASSTC). This comprises a small, self-contained 'hospital in a box' that allows the most severely wounded casualties to undergo treatment in forward areas of the battlefield. The US Marine Corps (USMC) Combat Development Command took delivery of the first prototype ASSTC in October 1997, only nine months after the design concept was established. The service's Warfighting Lab has since conducted field trials at Fort Bragg and Camp Lejeune. In May 1998, several former US Army medical personnel who had been closely involved with originating the ASSTC concept established a company, Tactical Medical Solutions (TMS), to build the suite and derivatives of it.

The USMC seems unlikely to place a production order for the ASSTC, although individual units have expressed interest in funding procurements for their own use. Earlier this year, the US Congress allocated US\$8 million of FY00 funding to buy about 30 ASSTCs to equip the National Guard, which will use them in both military and disaster-relief applications.

TMS is enlarging and refining the design, originally sized for internal carriage by the USMC's MV-22 Osprey tilt-rotor aircraft. It is being lengthened to allow the use of two operating tables (rather than one in the prototype) and an anaesthesia station; reducing the weight by 180kg; incorporating an integral water supply; and adopting hydraulic jacks that enable four personnel, rather than 10, to erect the structure in less than 30min (16min was achieved during developmental testing).

The ASSTC's structure consists of a tent constructed from an ultra-lightweight fabric, with an integral collapsible aluminum framework, attached to the top of an expandable container. The baseline design weighs 1,361kg unstocked, with the self-contained supplies and equipment adding 453kg. The unit collapses to fit in a box measuring 1.87 x 1.37 x 3.05m, and expands to form a room 3.86m wide by 3.05m long and 2.43m tall. The tent is 9.134m in diameter and 3.96m tall when deployed around the expanded structure, providing a working area of approximately 65m<sup>2</sup> for triage and surgery. The ASSTC can be towed on a trailer behind a HMMWV light utility vehicle and can be transported by helicopter or airlifter (including parachute delivery). The baseline design is laid out for 10 medical personnel, with an efficient patient flow pattern for triage, resuscitative surgery, post-operative care, and temporary patient holding. Alternatively, the ASSTC can function as a 20-bed hospital. Several such units may be interconnected to form large facilities.

Halogen surgical and fluorescent triage lights are standard. Options include mobile electric power (the unit requires a minimum of 15kw), patient-monitoring and telemedicine equipment, PDX-2000 digital radiography system, Micro-Paq field anaesthesia unit (which weighs a mere 3.6kg), electronic infusion pump and medical anchor desk (MAD).



The Infusion Dynamics Power Infuser, that weighs only 250g, is said to be the first portable electronic infusion pump designed specifically for life-saving delivery of intravenous (IV) fluids. Unlike traditional units, which administer medications at rates of a few milliliters per hour, the Power Infuser can deliver crystalloid or colloid IV fluids at rates of several liters per hour to restore blood pressure and intravascular volume.

The MAD permits management of all ASSTC functions from a single location. It can monitor fuel and water supplies, control heating and cooling, provide situational-awareness information such as weather reports and maps, handle communications networks, and track use of materials and remaining supplies. The MAD can also monitor multiple patients, update their records and track their treatment. TMS works closely with BioAsyst, which is developing several unique life-support devices. These include the mini-STAT, the Support and Evacuation Platform, and diagnostic equipment and devices.

The USMC's 'Urban warrior' advanced warfighting exercise in March included use of a portable field hospital based on the Mobile Expandable Container Configuration (MECC) shelter. This accommodates a surgical area, six beds and all the supplies needed for treatment. An additional area with cots on the side of the shelter, where patients can recover after receiving medical care, allows the facility to handle up to 50 major traumatic injuries and about 100 minor wounds.

The MECC, which costs around US\$45,000, collapses to 6 x 2.5m for transport and can be set up in 10min on arrival. 'Urban Warrior' also included testing of an experimental Digital Analog Recognition Phonetic Analyzer for use during humanitarian assistance operations in areas where English is not spoken. The device, worn around a corpsman's waist, translates what the patient is saying and transmits the output to the user's headphones.

The US Army Research Institute of Environmental Medicine is working with FitSense Technology to develop mobile physiological monitoring systems that are small, lightweight and rugged enough for field use. The core infrastructure technology for the FitSense systems is the BodyLAN - a wireless, low-power, near-field digital network that allows signals from multiple sensors to be moved around the body without interference. In a recent training exercise conducted by the USMC, the company's Vital Signs Monitor simultaneously tracked eight body parameters - including heart rate, caloric burn, sleep time, location (obtained via a GPS receiver) and temperature - on 15 individuals for 10 days. The wearable, wireless system logs sensor data and telemeters them to a data center.

FitSense has also developed a Body Core Temperature Monitor (BCTM) consisting of an instrumented pill the size of a jelly-bean, which the user swallows, and a pager-sized receiver. The COR-100 pill contains a miniature thermometer, accurate to 0.05°C, and a transmitter. The BCTM can take four readings a minute and store them for 14 days.

The US Air Force (USAF) is undergoing a similar process of re-organization and introducing new equipment. In April it conducted the first deployment of its new expeditionary medical squadrons when personnel based in Germany relocated to Albania to support NATO operations against Yugoslavia. Each squadron has 22 personnel - including teams providing preventive medicine, critical care and mobile field surgery - working in an air-transportable clinic. All the equipment, from the tents to the medical apparatus, fits on one pallet. The service is also upgrading its eight Air Transportable Hospitals (ATHs) for operation in the presence of chemical agents. The addition of an impermeable liner to the tent material avoids the need for technicians to wear cumbersome protective suits. The ATH is a 50-bed, self-contained mobile hospital that can be deployed by airlifter to provide medical support to a force of 4,000 personnel for 30 days without resupply. Three sizes of add-on unit - with 10, 14 and 25 beds - are available to meet different contingencies.

The USAF is additionally improving patient care aboard the C-17

airlifters of its aeromedical evacuation squadron by increasing the space between litters from 40cm to 53cm, which gives medical staff easier access to patients and equipment. Other improvements have been made to the litter arms, utility panel, oxygen lines, stanchions, and overall set-up and stowage procedures. The new, three-tier litter system allows the aircraft to accommodate up to 36 littered patients and 48 ambulatory patients.

In May, the Air Force Research Laboratory's Directed Energy Directorate and Fiber Optic Fabrications signed a co-operative R&D program to produce a multirole infrared laser. The compact, battery-operated device will have several military applications, including acting as a 'laser scalpel' for emergency battlefield surgery and illuminating targets for viewing through night-vision goggles. The directorate's Laser Applications Branch is contributing experience gained during development of the earlier Medpac unit. Fiber Optic Fabrications is adding its expertise in highly effective lasers and in fiber-optic systems that can efficiently carry laser energy. The company is also working with CeramOptec on a family of diode laser systems with power outputs of 15W, 25W and 50W. Their operating wavelength of 980 nanometers reacts well with body tissue when used in medical applications.

One US company specializing in the production of lightweight transportable shelters and the integration of fully-equipped multi-shelter complexes is Marion Composites of Virginia, a division of Advanced Technical Products. The company's Relocatable Hospital System is tailored to customers' specific needs and basic medical modules available include pre-op, operating room, ward, emergency receiving, pharmacy/lab/X-ray, power generation/water pumping, post-op, central material supply, dental, kitchen, laundry and others.

Arguably the largest field hospital program in Europe is that for the German armed forces (Bundeswehr), carried out by DaimlerChrysler Aerospace (Dasa)-subsidiary Dornier GmbH of Friedrichshafen. The company has been working throughout the 1990s on the development of its TransHospital concept for containerized, mobile field hospitals (MFHS), capable of maintaining a "complete medical infrastructure under the most extreme climatic and hygiene conditions". During the second half of the 1990s, Dornier has delivered a containerized medical clearing station, a first modular field hospital (63 containers) and a first field hospital for crisis reaction forces (47 containers) under turn-key projects for the German defense procurement agency, BWB.

The TransHospital concept is a combination of containers and tents, and covers at least four scopes of performance: lifesaving emergency treatment; general surgery and internal treatment; extended specialist treatment; and final treatment. The concept uses laterally expandable ISO-standard containers that are quickly connectable to each other to form fully functional medical units.

The containers can be transported without difficulty by trailer, truck, aircraft (C-130/C-160 and larger), helicopter, rail or ship. TransHospital units are claimed to be fully autonomous as all items required for medical care are carried-on; NBC protection can be provided for a duration of at least three hours; and each container is equipped with an individual air-conditioning set. Using a Lego-like building block system, TransHospital units can be easily extended with specialist sections (internal medicine, eyes, urology, gynaecology, dermatology/phlebology, orthopaedics, neurology and/or others), laboratories (clinical-chemical, medicine research, food chemistry and water, veterinary medicine, microbiology and hygiene) or diagnostic areas (radiodiagnostics and/or computertomography).

At the operational location, the self-contained, air-tight TransHospital container units can be ready for use within 15-60min, depending on the container type. Exercises by the German Army have shown that a 7-part segment surgery/intensive care unit can be fully operational within 14 hours; a full Mobile Rescue Center (MRC) within 16.5-18 hours.

Basic components are a reception and emergency ward, shock treatment

unit, surgery and intensive care/recovery, support functions such as a pharmacy, sanitary supplies and pathology, and a number of general facility engineering units, including a satellite communications unit to support telemedicine operations.

Dornier documentation shows a three-stage concept of TransHospital emergency services. Lifesaving immediate treatment would be provided by what Dornier calls Mobile Rescue Stations (MRSSs), consisting of a single TransHospital container unit, and several tented accommodation and support units located about 10km from the area of incident. In the second stage, general surgical and internal treatment would be provided in an MRC approximately 20-30km to the rear, comprising of around 25 container units accommodation tents for major and minor injuries, and other support tents. Finally, another 30-50km away, there would be a full MFH where extensive medical treatment could be provided on the scale of a regular hospital.

According to Dornier, the Bundeswehr is planning to procure two MFHS (to equip the joint emergency and medical service; 33 MRSSs, 10 MRCs and two MFHS to equip the army; 18 MRSSs and three MRCs to equip the air force; and two ship-borne MRCs to equip the navy, all to be delivered by 2008. So far, at least two complete field hospitals and six MRSSs have been delivered. TransHospital was selected by the United Arab Emirates last year and is also being considered by the Greek Army.

German company Zeppelin Mobile Systems is offering field hospital solutions based on its MobilMediCare concept that makes use of 20ft ISO-standard shelters, again expandable to create extra floorspace.

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**SPECIAL FEATURE:**

**Photograph**

**COMPANY NAMES (DIALOG GENERATED):** Advanced Technical Products : Air Force Research Laboratory : ARPA SA : BWB : Combat Casualty Care Research : Danish Camp Supply : Defense Advanced Research Projects Agency : Dornier GmbH : Ego Zlin Ltd : FitSense Technology : Fokker Special Products : Giat Industries : Harris RF Communications : Informatech : Irvin Aerospace Spa : Life Support : Materiel : Medical Center : Medical Communications : Medical Reengineering Initiative : Medical Research : Medical Solutions : Mobile Rescue Center : Mobile Surgical Field Hospital : MECC : National Training Center : Naval Research : Netherlands Ministry : Normeca AS : **Personal Information Carriers** : PICS : R & D : Relocatable Hospital : Special Products : Stork Aerospace : Tactical Medical Developments : US Army Research Institute of Environmental Medicine : TMS : US Air Force : US Congress : Warfighting Lab : Zeppelin Mobile Systems

**14/5/2 (Item 2 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace

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word Count:88

**BRIEFS - Digital dog tags:**

INTERNATIONAL DEFENSE REVIEW (IDR) OCTOBER 01, 1998 p. 37 v.031 no. 010  
Section Heading: DEFENSE ELECTRONICS AND COMPUTING

The US Army expects to issue a request for proposals this month to supply 'digital dog tags' - **personal - information carriers** containing part or all of the wearer's medical history - for further testing. Field trials of candidates during Fiscal Year 1999 will involve 30,000 troops from all the US armed services. Seven such designs underwent two months of environmental testing this summer at the Army Electronic Proving Ground, Fort Huachuca, Arizona. The devices, the size of a credit card or smaller, can store up to 340Mbytes of data.

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**20/3,k/1 (Item 1 from file: 198)**

DIALOG(R)File 198:Health Devices Alerts(R)

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00594785 ABS-29047 SUBFILE: ABS

PRODUCT(s): 16-235 MEDICAL ALERT IDENTIFICATION

SOURCE: wharry S. Medicalert Foundation turns 35, issues warning to MDS about lookalike bracelets. "Can Med Assoc J" 1996 Mar 15;154(6):919-20.

COMMON DEVICE NAME: Medicalert **Bracelets**

The author discusses the Medicalert **bracelet** system, which patients join for a lifetime and which provides updated **medical files** in an emergency to healthcare workers through a toll-free hotline. **Medical files** can be updated every year and include a patient's medical history, medications, allergies, attending physician's name, and emergency contact numbers. The author concludes that imitation **bracelets** are not supported by the Medicalert system and do not provide physicians with essential **medical information**.

**20/3,k/2 (Item 1 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace

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10917960 word Count:476

**Bloodhound to track down wounded**

INTERNATIONAL DEFENSE REVIEW (IDR) 01-Jun-2003 v.036 no. 006

Section Heading: DEFENSE SCIENCE & TECHNOLOGY

...of a real-time monitoring system using new sensor and wireless communications technologies to track **health data** and assess injuries remotely.

The initial work focusses on three areas: prototype wearable integrated optical...

...pulse-rate simultaneously; human/machine interfaces and diagnostic algorithms to enhance field operation of a **body - worn** Terason 2000 ultrasound imaging system to be used by medics; and low-maintenance, field-deployable...

**20/3,k/3 (Item 2 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace

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10914205 word Count:3341

**Sights and displays: cutting the big picture down to size**

INTERNATIONAL DEFENSE REVIEW (IDR) FEBRUARY 01, 2003 v.036 no. 002

Section Heading: FEATURE

...maps, charts, diagrams, text and other information generated by sources ranging from hand-held or **body - worn** devices to remote supercomputers. Under an agreement between Microvision and Antelope Technologies, the two companies...communications network, allowing military surgical personnel and other staff to access, read and transmit critical **medical data**.

Virtual cockpit

The US Army's Aviation Applied Technology Directorate (AATD) has awarded Microvision a...

?

t24/3,k/all

**24/3,k/1 (Item 1 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace  
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10917960 Word Count:476

**Bloodhound to track down wounded**

INTERNATIONAL DEFENSE REVIEW (IDR) 01-Jun-2003 v.036 no. 006  
Section Heading: DEFENSE SCIENCE & TECHNOLOGY

The **Telemedicine** & Advanced Technology Research Center within the US Army Medical Research and Materiel Command (USAMRC) is...

...Institute for the first year of research in what is expected to be a multiyear **tele - medicine** study. The BEI's Center for Untethered Medicine will investigate the development of a real...

...pulse-rate simultaneously; human/machine interfaces and diagnostic algorithms to enhance field operation of a **body - worn** Terason 2000 ultrasound imaging system to be used by medics; and low-maintenance, field-deployable...

COMPANY NAMES (DIALOG GENERATED): Army Medical Research : Bioengineering Institute : BEI 's Center : Materiel Command : Polytechnic Institute : **Telemedicine** & Advanced Technology Research Center : USAMRC

**24/3,k/2 (Item 2 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace  
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10914205 Word Count:3341

**Sights and displays: cutting the big picture down to size**

INTERNATIONAL DEFENSE REVIEW (IDR) FEBRUARY 01, 2003 v.036 no. 002  
Section Heading: FEATURE

...maps, charts, diagrams, text and other information generated by sources ranging from hand-held or **body - worn** devices to remote supercomputers. Under an agreement between Microvision and Antelope Technologies, the two companies...Wireless Medical Enterprise Program, conducted by the US Army Medical Research and Materiel Command's **Telemedicine** and Advanced Technology Research Center in support of its INFOMEDIC concept. This combines a variant...

**24/3,k/3 (Item 3 from file: 587)**

DIALOG(R)File 587:Jane's Defense&Aerospace  
(c) 2005 Jane's Information Group. All rts. reserv.

10851635 Word Count:4540

**FEATURE - WEARABLE INFORMATION TAILORED TO BATTLEFIELD\**

INTERNATIONAL DEFENSE REVIEW (IDR) NOVEMBER 01, 1996 p. 1 v.001 no. 011  
By: Mark Hewish

...alleviating a measure of their workload.

The advent of compact but powerful hand-held or **body - worn** computers, often used in conjunction with head-mounted displays, is providing dismounted personnel with facilities...

...provide additional inputs to support more complex applications. These can include image acquisition and manipulation, **telemedicine** and remote operation of unmanned vehicles.

The Israel Defense Force (IDF) Ordnance Corps is equipping...known as the Dual Use Applications Program (DUAP) - has provided funding for other developments in **body - worn** computing and HMDs. Boeing Computer Services, in collaboration with Honeywell, Virtual Vision and CMU, has...to complete an assessment aboard USS Yorktown, its Smart Ship demonstrator, in October 1996.

The **body - worn** computer incorporates a 75 MHz 486 DX4 processor with 24 Mbytes of RAM and an...of DARPA's Smart Modules effort. US Army

Photograph:

Xybernaut has supplied its Mobile Assistant **body - worn** voice-activated computer for several military applications. The Aviation Applied Technology Directorate of the US...

...Rockwell is marketing Trekker running specialized software for applications including aircraft maintenance. Trekker uses a **body - worn** computer based on a 50 MHz 486 processor, with 16 Mbytes of RAM and a...

24/3,K/4 (Item 1 from file: 589)

DIALOG(R)File 589:FI Defense Market Intelligence  
(c) 2005 Forecast Intl/DMS. All rts. reserv.

00005431

ANIK

Binder: SPACE SYSTEMS  
Category: CIVIL COMMUNICATIONS/TV SATELLITES  
Pub. Date: JUNE 01, 2005  
Source: Forecast International/DMS  
Language: English  
Word Count: 3775

TYPE

Anik is a Canadian telecommunications satellite system.

Country: UNITED STATES, CANADA  
Industry: AEROSPACE AND DEFENSE  
Companies: LOCKHEED MARTIN, SPAR AEROSPACE LTD  
Sections: EXECUTIVE, CURRENT STATUS & OUTLOOK, QUANTITY, MISSION, PRICE RANGE, CONTRACTORS, CHARACTERISTICS, UPGRADES, BACKGROUND, TIMETABLE, FORECAST

Binder Code: SS

...will receive \$38 million worth of Anik F2 capacity, to bring civil services such as **telemedicine** and education to rural areas of Canada.

Telesat maintains full ownership of the satellite, which...

...major television networks (i.e., ABC, CBS, FOX, NBC, PBS), cable programmers (e.g., CNN, **Jewelry** Television, Shop at Home), and services to the educational, religious, government, business and entertainment sectors...

?



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show files;ds  
File 350:Derwent WPIX 1963-2005/UD,UM &UP=200541  
(c) 2005 Thomson Derwent

Set	Items	Description
S1	10708	MC=T04-K02?
S2	1706	MC=S05-G02G1?
S3	75	S1 AND S2
S4	17	S3 NOT AY=(2000 OR 2001 OR 2002 OR 2003 OR 2004 OR 2005)
?		

?t4/3,ab/all

**4/3,AB/1**

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

014889117

WPI Acc No: 2002-709823/200277

Related WPI Acc No: 1999-066436

XRPX Acc No: N02-559731

**Card-based health care service provision system selects suitable nursing staff to attend particular patient, based on medical records/reports read from patient's card and information read from staff's card**

Patent Assignee: OKI H (OKIH-I)

Number of Countries: 001 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2002236753	A	20020823	JP 97137809	A	19970512	200277	B
			JP 200216929	A	19970512		
JP 3495361	B2	20040209	JP 97137809	A	19970512	200413	
			JP 200216929	A	19970512		

Priority Applications (No Type Date): JP 97137809 A 19970512; JP 200216929 A 19970512

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2002236753	A		5	G06F-017/60	Div ex application JP 97137809
JP 3495361	B2		5	G06F-017/60	Div ex application JP 97137809
					Previous Publ. patent JP 2002236753

Abstract (Basic): JP 2002236753 A

Abstract (Basic):

NOVELTY -- A management device (10) reads and stores information about staffs of various department in a health care center from the cards (3) of the staff. A central processor (11) in the health care center, reads medical reports records of a patient from his/her card (2) and selects suitable nursing staff to attend the patient. The processor updates the medical report in the card, after the patient is treated.

USE - For providing health care services to patients.

ADVANTAGE - By integrating all the information necessary for health care service in the card, the need for the patients to carry separate paper-based reports/records of each medical examination is eliminated. Hence, management operation are simplified during provision of health care services.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the card-based health care services provision system.

Card of patient (2)

Cards of staff (3)

Management device (10)

Central processor (11)

pp; 5 DwgNo 1/1

**4/3,AB/2**

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

014234227

WPI Acc No: 2002-054925/200207

Related WPI Acc No: 2003-199161

XRPX Acc No: N02-040515

**User information providing method involves inserting machine readable portion of electronic memory chip located inside locket so that information stored in chip is accessed by reader**

Patent Assignee: HOOGLANDER P (HOOG-I)

Inventor: HOOGLANDER P

Number of Countries: 001 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20010045469	A1	20011129	US 9879627	P	19980327	200207	B
			US 99277181	A	19990326		

Ginger R. DeMille

US 6419158 B2 20020716 US 9879627 P 19980327 200248  
US 99277181 A 19990326

Priority Applications (No Type Date): US 9879627 P 19980327; US 99277181 A 19990326

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20010045469	A1		8	G06K-019/06	Provisional application US 9879627

US 6419158 B2 G06K-019/06 Provisional application US 9879627

Abstract (Basic): US 20010045469 A1

Abstract (Basic):

NOVELTY - A locket has an electronic memory chip (1) which stores the information about the user. The locket is opened to expose the machine readable portion of the memory chip and the machine readable portion is inserted into an EPROM card reader so as to access the information stored in the chip.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for user information carrying system.

USE - For providing user's medical/personal information, organ donor information, etc., stored in memory chip of locket which is attached to shoe, necklaces, wrist bands or other modes of attachment of the user.

ADVANTAGE - Facilitates the reading of electronic information by electronic reading device easily.

DESCRIPTION OF DRAWING(S) - The figure shows the square shaped locket.

Electronic memory chip (1)  
pp; 8 DwgNo 1A/3

4/3,AB/3

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

014083064

WPI Acc No: 2001-567278/200164

XRPX Acc No: N01-422463

**Physical parameters measuring device for health diagnosis system, measures physical parameter, processes it and writes measured data in IC card**

Patent Assignee: NITTUKO KK (NITT-N)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2001017395	A	20010123	JP 99194732	A	19990708	200164 B

Priority Applications (No Type Date): JP 99194732 A 19990708

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2001017395	A		3	A61B-005/00	

Abstract (Basic): JP 2001017395 A

Abstract (Basic):

NOVELTY - The measuring device (1) has digital measuring section (2), control section (3) and IC card writing section (4) interconnected by interface (6). The measuring section measures physical parameters, such as body weight, blood pressure and stature of patient. Control section converts measured value into data for IC card. The writing section writes converted data in IC card (1) by EM induction effect.

USE - For health diagnosis system.

ADVANTAGE - Measured data are entered in the IC card correctly and quickly without any operation mistake such as visual observation confirmation mistake and entry mistake generation.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the physical parameter measuring device.

Measuring device (1)  
Measuring section (2)  
Control section (3)  
Writing section (4)  
Interface (6)

pp; 3 DwgNo 1/2.

**4/3,AB/4**

DIALOG(R)File 350:Derwent WPIX  
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013885221

WPI ACC No: 2001-369434/200139

XRPX ACC No: N01-269654

**Non-contact IC card system for use in medical field, acquires field strength data corresponding to three dimensional coordinate position of IC card which is positioned by robot, as evaluation data**

Patent Assignee: KOKUSAI DENKI KK (KOKZ )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2000339418	A	20001208	JP 99145850	A	19990526	200139 B

Priority Applications (No Type Date): JP 99145850 A 19990526

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2000339418	A		10	G06K-017/00	

Abstract (Basic): JP 2000339418 A

Abstract (Basic):

NOVELTY - The computer (3) controls robot (1) that positions IC card (1) at three dimensional coordinate position. The computer acquires field strength data corresponding to three dimensional coordinate position as evaluation data.

USE - For reading microcomputer chip embedded IC card such as credit cards and cards used in medical field, financial institution and traffic field.

ADVANTAGE - Efficiency is increased since evaluation is performed to field strength data which is obtained after performing accurate three dimensional coordinate positioning of IC card.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of non-contact IC card.

Robot (1)

Computer (3)

pp; 10 DwgNo 1/4

**4/3,AB/5**

DIALOG(R)File 350:Derwent WPIX  
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013699131

WPI ACC No: 2001-183355/200119

XRPX ACC No: N01-130944

**Digital storage medium for medical and pharmaceutical data, used in clinical trials to hold treatment information concerning individual patient**

Patent Assignee: CUYPERS J (CUYP-I)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
BE 1012488	A6	20001107	BE 99136	A	19990225	200119 B

Priority Applications (No Type Date): BE 99136 A 19990225

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
BE 1012488	A6	F	6	G06K-000/00	

Abstract (Basic): BE 1012488 A6

Abstract (Basic):

NOVELTY - The digital storage medium in a smart card or other interactive medium. Patient data can be entered by a doctor, together with medical history, diagnoses, etc. Drug details and dosages can be added by a pharmacist. The patient can be allotted a randomly chosen reference number to preserve confidentiality when data analysed by the card issuer, e.g. a drug company or government agency.

Ginger R. DeMille

USE - used in clinical trials to hold treatment information concerning individual patient  
ADVANTAGE - Simple and confidential method of gathering data during clinical trials of new drugs and other treatments  
pp; 6 DwgNo 0/0

4/3,AB/6

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

013179087

WPI Acc No: 2000-350960/200031

XRPX Acc No: N00-262978

**Electronic 'smart card' with patient's medical and pharmaceutical data, is accessed by patient's doctor, nurse, pharmacist, etc.**

Patent Assignee: CUYERS J (CUYP-I)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
BE 1012002	A4	20000404	BE 97856	A	19971028	200031 B

Priority Applications (No Type Date): BE 97856 A 19971028

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
BE 1012002	A4 F	8	G06K-000/00	

Abstract (Basic): BE 1012002 A4

Abstract (Basic):

NOVELTY - The details of the patient's intended treatment is entered in the chip on the card by the doctor, via a computer. At the same time, details of any allergies or other data relating to the patient's condition can be added. The pharmacist's computer accesses the data to help in dispensing and also adds records of any prescriptions dispensed. The card could be combined with a state social security card.

USE - Medical record keeping

ADVANTAGE - ensures accurate and easily accessible record keeping

pp; 8 DwgNo 0/0

4/3,AB/7

DIALOG(R)File 350:Derwent WPIX  
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013050550

WPI Acc No: 2000-222404/200019

XRPX Acc No: N00-166498

**Medical information management system using portable optical card**

Patent Assignee: NIPPON CONLUX CO LTD (NICO-N); SHIINA S (SHII-I)

Inventor: HONDA H; SHIINA S

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6021393	A	20000201	US 94229558	A	19940419	200019 B
			US 95543466	A	19951016	
			US 97885398	A	19970630	

Priority Applications (No Type Date): US 97885398 A 19970630; US 94229558 A 19940419; US 95543466 A 19951016

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 6021393	A	13	G06F-159/00	Cont of application US 94229558 CIP of application US 95543466

Abstract (Basic): US 6021393 A

Abstract (Basic):

NOVELTY - The optical card includes optical information recording area IC memory area, and a magnetic information recording area. Read/write drive for the card has a coupler section that includes a set of transmitters/receivers. The positional relationship between the transmitters/receivers remain unchanged even when carrier table housing

the card, is moving, for reading and/or writing optical information.  
DETAILED DESCRIPTION - The read/write drive includes an optical head carrier mechanism for loading the memory card on a carrier table. The coupler section couples electronic information to be read and written from and to the IC memory area so that reading and writing optical information can be conducted simultaneously with reading and writing of electronic information. A display device and reproduction device for visually and audibly reproducing character and sound information respectively is provided.

USE - For recording patient's personal medical information onto optical card having limited storage capacity.

ADVANTAGE - The optical card is nonvolatile and handy for carrying. It is possible to efficiently record medical information as needed depending on specific morbit state of the patient. Therefore if only the patient carries the optical card bearing his or her medical information to a given doctor, doctor by only setting the medical information, can have the character and image information visually shown and also can have the sound information audibly reproduced. The optical card if soiled can be reused again by wiping the surfaces.

DESCRIPTION OF DRAWING(S) - The figure shows the flow chart explaining an example of write process carried out by the medical information management system.

pp; 13 DwgNo. 5/9

**4/3,AB/8**

DIALOG(R)File 350:Derwent WPIX  
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012960322

WPI ACC No: 2000-132172/200012

XRPX ACC No: N00-099937

**Electronic data processing adaptor**

Patent Assignee: HITACHI MAXELL KK (HITM )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2000003417	A	20000107	JP 9944970	A	1999022	200012 B

Priority Applications (No Type Date): JP 9842153 A 19980224

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
JP 2000003417	A	12	G06K-017/00	

Abstract (Basic): JP 2000003417 A

Abstract (Basic):

NOVELTY - A magnet ring (16) is rotated by the drive mechanisms of a disc drive unit. A yoke (17), around which coils are wound midway through the magnetic circuit, is distributed along a predetermined gap (G) to surround the magnet ring. The ring and the yoke are integrally connected via ball bearings (21) that are rotated following the rotation of the ring.

USE - For connecting electronic card, e.g. IC card, used in various information-processing systems, e.g. electronic monetary system, medical examination system, electronic ticket system, to electronic data-processing apparatus, e.g. general-purpose personal computer.

ADVANTAGE - Improves electricity-generating efficiency due to smooth rotation of magnet ring. Improves efficiency by which coil-winding space is utilized. Reduces operating costs by simplifying manner by which coil is wound around yoke during manufacture of generator.

DESCRIPTION OF DRAWING(S) - The figure shows the expanded view of the adaptor.

Magnet ring (16)  
Yoke (17)  
Ball bearings (21)  
Gap (G)

**4/3,AB/9**

DIALOG(R)File 350:Derwent WPIX  
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012934540

WPI Acc No: 2000-106387/200009

XRPX Acc No: N00-081702

**System storing useful personal data about an individual**

Patent Assignee: NASO C (NASO-I)

Inventor: NASO C

Number of Countries: 082 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9967740	A1	19991229	WO 98IT187	A	19980706	200009 B
AU 9882404	A	20000110	AU 9882404	A	19980706	200025
IT 1302133	B	20000731	IT 98MI1442	A	19980624	200213

Priority Applications (No Type Date): IT 98MI1442 A 19980624

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

WO 9967740 A1 E 18 G06K-019/077

Designated States (National): AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW

AU 9882404 A G06K-019/077 Based on patent WO 9967740

IT 1302133 B G06K-000/00

Abstract (Basic): WO 9967740 A1

Abstract (Basic):

NOVELTY - Personal data about an individual is loaded in a microchip (22) for possible access by emergency services in situations where the individual cannot communicate. The microchip may be lodged under the skin of the individual concerned, identified by a small tattoo, or worn in a ring, watch, bracelet or the like. The chip is loaded through an opto-electrical connection between the loading device (65) and the chip under control of a stored program. The information stored can be any personal information, e.g. medical conditions, name, address.

USE - Discovering personal information about an individual.

ADVANTAGE - Makes a large quantity of potentially useful information available easily and effectively

DESCRIPTION OF DRAWING(S) - Figure 11 is a schematic showing the microchip in place under the skin

Microchip (22)

Loading device (65)

pp; 18 DwgNo 11/11

4/3,AB/10

DIALOG(R)File 350:Derwent WPIX

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012889844

WPI Acc No: 2000-061678/200005

XRPX Acc No: N00-048369

**Medical field data capture and retrieval method using electronic data storing device**

Patent Assignee: US SEC OF NAVY (USNA )

Inventor: FORTNEY C E; GALARNEAU M R; ROSEN R D; WILCOX W W

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5995077	A	19991130	US 94277802	A	19940720	200005 B
			US 96594481	A	19960131	

Priority Applications (No Type Date): US 94277802 A 19940720; US 96594481 A 19960131

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

US 5995077 A 9 G09G-005/00 Cont of application US 94277802

Abstract (Basic): US 5995077 A

**Abstract (Basic):**

**NOVELTY** - Data card is inserted into slot of housing and data capture and retrieval mode is activated. Data is entered or selected from the tree of medical data entry menus displayed on screen, by depressing an enter' or select' switch, respectively. The entered data which creates a field entered data is stored in EEPROM along with personal identification data.

**DETAILED DESCRIPTION** - EEPROM is situated on the data card. The time required for creating the field entered data is also stored on the EEPROM. The personal identification data and the entered data are displayed on a display screen. The personal identification data is transferred to the read/write device. An INDEPENDENT CLAIM is also included for the electronic read/write data storage system.

**USE** - For recording patient identification information and pertinent medical data.

**ADVANTAGE** - Since the data entry, storage and retrieval device is not individualized, abnormally operating device may be readily replaced by another such device, thus permitting convenient redundancy. Internal adjustment for the back lighting intensity may be made externally. The data card of simplified construction and reduced size is obtained.

**DESCRIPTION OF DRAWING(S)** - The figure shows the block diagram of the entire electronic data storage device.  
pp; 9 DwgNo 2/3

**4/3,AB/11**

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

012757109

WPI ACC No: 1999-563228/199948

XRPX ACC No: N99-416225

**Data processing apparatus with label printer, e.g. for medical tests**

Patent Assignee: MEDIAFORM INFORMATIONSSYSTEME GMBH (MEDI-N)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 29911217	U1	19990916	DE 99U2011217	U	19990621	199948 B

Priority Applications (No Type Date): DE 99U2011217 U 19990621

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 29911217	U1		18	G06F-003/12	

Abstract (Basic): DE 29911217 U1

Abstract (Basic):

**NOVELTY** - The apparatus has a memory, e.g. a chip card or magnetic strip card, from which data are read out, encoded and formatted for printed on a label. Further data are generated for printing on the label. The data read from the memory and the generated data are encoded in such a way that they can be printed as alphanumeric symbols or in the form of a machine-readable bar code or similar. The data processing software may be stored on compact disc or diskette.

**USE** - For printing a label from a medical insurance card, e.g. for attaching to blood sample, smear sample, urine or stool sample.

**ADVANTAGE** - Patient data can be provided accurately and quickly to a laboratory.  
pp; 18 DwgNo 1/2

**4/3,AB/12**

DIALOG(R)File 350:Derwent WPIX  
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012735249

WPI ACC No: 1999-541366/199946

XRPX ACC No: N99-401226

**Medical patient data storage method, e.g. for X-ray or computer tomography images**

Patent Assignee: GUTJAHR T (GUTJ-I); LINKWITZ S (LINK-I)

Inventor: GUTJAHR T; LINKWITZ S

Number of Countries: 001 Number of Patents: 001



## Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 19804605	A1	19990812	DE 1004605	A	19980206	199946 B

Priority Applications (No Type Date): DE 1004605 A 19980206

## Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19804605	A1		3	G06F-003/06	

Abstract (Basic): DE 19804605 A1

## Abstract (Basic):

NOVELTY - The patient data storage method uses digitization of the patient medical data before recording the data on a storage element, e.g. a chip card, via a read/write head, with verification of the authorization before access to the stored information is permitted and documentation of the time and identification of each permitted data access.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM for a device for recording medical patient data is also included.

USE - The method is used for recording patient X-ray or computer tomography image information.

ADVANTAGE - The method protects the recorded information from unauthorized access.

pp; 3 DwgNo 0/0

## 4/3, AB/13

DIALOG(R) File 350:Derwent WPIX

(c) 2005 Thomson Derwent. All rts. reserv.

011744631

WPI ACC No: 1998-161541/199815

XRPX ACC No: N98-128518

**Authentication method for smart cards carrying health data - requiring first card to generate random number which is held in reader and second card to generate authentication code from this number for reading by first card**

Patent Assignee: GRP INTERET PUBLIC CARTE PROFESSIONNEL (INTE-N);  
SCHLUMBERGER IND SA (SLMB )

Inventor: ISPHORDING W

Number of Countries: 019 Number of Patents: 004

## Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 829831	A1	19980318	EP 97401875	A	19970804	199815 B
FR 2753556	A1	19980320	FR 9611211	A	19960913	199818
EP 829831	B1	20010704	EP 97401875	A	19970804	200138
DE 69705472	E	20010809	DE 605472	A	19970804	200153
			EP 97401875	A	19970804	

Priority Applications (No Type Date): FR 9611211 A 19960913

## Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 829831	A1	F	10	G07F-007/10	

Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE SI

FR 2753556 A1 G07F-007/10

EP 829831 B1 F G07F-007/10

Designated States (Regional): BE DE ES FI FR NL PT SE SI

DE 69705472 E G07F-007/10 Based on patent EP 829831

Abstract (Basic): EP 829831 A

The authentication operates in a system where data is exchanged between two cards using a single-card reader. The first card (1) is inserted, and generates a random number RN which is sent to the terminal (2) and is also stored in non-volatile programmable memory (EEPROM) in the card.

The first card is withdrawn and a second card inserted to receive the random number, and to generate an authentication code which is sent to the terminal. The second card is withdrawn and the first card reinserted. The random number is re-activated in the first card and processes the authentication code to decide whether or not access will be allowed to the data stored on the first card.

ADVANTAGE - Provides reliable and secure exchange of data when two cards, one belonging to patient and other to health worker. Must be read by reader with single slot that can accept only one card at time.  
Dwg.1/4

4/3,AB/14

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

011730972

WPI ACC No: 1998-147882/199814

XRFX ACC No: N98-117189

**Data terminal for medical professionals and paramedics - has combined card reader for smart card holding patient's medical history and for patient's bank card to allow immediate transfer of payment via modem**

Patent Assignee: SERVEAUX R (SERV-I)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
FR 2752317	A1	19980213	FR 9610240	A	19960809	199814 B

Priority Applications (No Type Date): FR 9610240 A 19960809

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
FR 2752317	A1		11	G06K-007/00	

Abstract (Basic): FR 2752317 A

The data terminal operates with a smart card (18) carried by each patient and containing their medical history. The pocket-size portable terminal (2) has a reader (17) that accepts the smart card. The terminal is associated with a fixed base station (1) into which the portable terminal plugs.

The portable terminal has a computer (11) co-operating with the card reader to process the smart card carrying the patients medical record, using a key pad or touch screen for entry of data. A terminal also serves as a telephone terminal. The reader also processes the patient's bank card, with direct transfer of funds from patient's bank account to practitioner's account via telephone.

USE - Terminal for medical practitioners, dentists, hospitals, laboratories, radiologists.

ADVANTAGE - Improves operational convenience for practitioner particularly on home visits, and assists in monitoring abuses of procedures.

Dwg.1/1

4/3,AB/15

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

011730971

WPI ACC No: 1998-147881/199814

XRFX ACC No: N98-117188

**Data terminal for medical professional or paramedic - has combined card reader for smart card which contains patient's medical history and patient's bank card to allow immediate transfer of payment via modem**

Patent Assignee: SERVEAUX R (SERV-I)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
FR 2752316	A1	19980213	FR 9610239	A	19960809	199814 B

Priority Applications (No Type Date): FR 9610239 A 19960809

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
FR 2752316	A1		7	G06K-007/00	

Abstract (Basic): FR 2752316 A

The data terminal operates with a smart card (8) carried by each patient which holds the patients medical records. The card is presented to a reader (7) to allow inspection and alteration of the medical

record.

The same reader accepts the patient's bank card (9) and collects payment by communication over the telephone line, via a modem, with the patient's bank and with the practitioners bank. The payment information is temporarily displayed on a display unit (3) while the transaction is taking place over the telephone line (5).

USE - Terminal for medical practitioners, dentists, hospitals, laboratories, radiologists.

ADVANTAGE - Faster collection of payment for practitioners, reducing load of paperwork associated with medical insurance.

Dwg.1/1

**4/3,AB/16**

DIALOG(R)File 350:Derwent WPIX

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011167385

WPI Acc No: 1997-145310/199713

Related WPI Acc No: 1997-101121

XRPX Acc No: N97-120258

**System for transmission and storage of personal clinical medical data - has IC card with microprocessor-controlled write/read memory and card read/write device driven via personal computer, laptop connected to data network via interface**

Patent Assignee: MC MEDICAL CARD SYSTEMS GMBH (MCME-N)

Inventor: ENDERLE R; SCHULTZE W

Number of Countries: 030 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9704712	A1	19970213	WO 96EP3202	A	19960719	199713 B

Priority Applications (No Type Date): DE 1036204 A 19950928; DE 1027326 A 19950726; DE 1028084 A 19950731

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
-----------	------	-----	----	----------	--------------

WO 9704712	A1	G	19	A61B-019/00	
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Designated States (National): BG CZ EE GE HU MK PL RO SI SK UA UZ

Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT LU

MC NL PT SE

Abstract (Basic): WO 9704712 A

The system contains an IC card with a microprocessor-controlled write/read memory. A card read/write device is driven via a PC, laptop and connected to a data network via an interface. The IC card contains patient specific information relevant to emergency situations and medication information which is accessed by the treating doctor via the read/write device.

Interactions between medicines, contraindications wrt. medicines and allergies are displayed using a check module after entering medication data. Data is exchanged via the interface with external data memories with diagnostic and results libraries to support diagnoses and the doctor's diagnosis is stored in standard code on the IC card.

ADVANTAGE - Enables quantity of specific patient information to be stored in minimal space with interactive access and processing via peripheral equipment.

Dwg.1/1

**4/3,AB/17**

DIALOG(R)File 350:Derwent WPIX

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011130196

WPI Acc No: 1997-108120/199710

XRPX Acc No: N97-089517

**Personal human anatomy card producing - providing card contg machine-readable storage medium integrated in it then tomographically creating number of two-dimensional cross-sectional images of a portion of individual**

Patent Assignee: MOTOROLA INC (MOTI )

Inventor: PERTTUNEN C D; REBER W L

Number of Countries: 073 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5597182	A	19970128	US 95533825	A	19950926	199710 B
WO 9711854	A1	19970403	WO 96US14329	A	19960906	199719
AU 9669165	A	19970417	AU 9669165	A	19960906	199732

Priority Applications (No Type Date): US 95533825 A 19950926

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

US 5597182 A 11 B42D-015/00

WO 9711854 A1 E 26 B42D-015/00

Designated States (National): AL AM AT AU AZ BB BG BR BY CA CH CN CU CZ  
DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD  
MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ VN

Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT KE  
LS LU MC MW NL OA PT SD SE SZ UG

AU 9669165 A B42D-015/00 Based on patent WO 9711854

Abstract (Basic): US 5597182 A

The method involves providing a card member having a machine-readable storage medium integrated in it then tomographically creating a number of two-dimensional cross-sectional images of a portion of the individual. The number of two-dimensional cross-sectional images are processed to form data representative of a three-dimensional model of the portion of the individual. The data is compressed to form compressed data representative of the three-dimensional model. The compressed data is then stored in a machine-readable form on the machine-readable storage medium of the card member.

The method further entails integrating a three-dimensional data player in the card member. The three-dimensional data player is used for navigating the three-dimensional model.

USE/ADVANTAGE - As personal medical information card. Can be used for medical and identification purposes.

Dwg.1/9

?

? t1/4/

1/4/1

DIALOG(R)File 350:Derwent WPIX  
(c) 2005 Thomson Derwent. All rts. reserv.

IM- \*Image available\*

AA- 2000-061678/ 200005 |

XR- <XRPX> N00-048369|

TI- Medical field data capture and retrieval method using electronic data  
storing device|

PA- US SEC OF NAVY (USNA )|

AU- <INVENTORS> FORTNEY C E; GALARNEAU M R; ROSEN R D; WILCOX W W|

NC- 001|

NP- 001|

PN- US 5995077 A 19991130 US 94277802 A 19940720 200005 B

<AN> US 96594481 A 19960131|

AN- <LOCAL> US 94277802 A 19940720; US 96594481 A 19960131|

AN- <PR> US 94277802 A 19940720; US 96594481 A 19960131|

FD- US 5995077 A G09G-005/00 Cont of application US 94277802|

LA- US 5995077(9)|

AB- <PN> US 5995077 A|

AB- <NV> NOVELTY - Data card is inserted into slot of housing and data  
capture and retrieval mode is activated. Data is entered or selected  
from the tree of medical data entry menus displayed on screen, by  
depressing an enter' or select' switch, respectively. The entered data  
which creates a field entered data is stored in EEPROM along with  
personal identification data.|

AB- <BASIC> DETAILED DESCRIPTION - EEPROM is situated on the data card. The  
time required for creating the field entered data is also stored on the  
EEPROM. The personal identification data and the entered data are  
displayed on a display screen. The personal identification data is  
transferred to the read/write device. An INDEPENDENT CLAIM is also  
included for the electronic read/write data storage system.

USE - For recording patient identification information and  
pertinent medical data.

ADVANTAGE - Since the data entry, storage and retrieval device is  
not individualized, abnormally operating device may be readily replaced  
by another such device, thus permitting convenient redundancy. Internal  
adjustment for the back lighting intensity may be made externally. The  
data card of simplified construction and reduced size is obtained.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of  
the entire electronic data storage device.

pp; 9 DwgNo 2/3|

DE- <TITLE TERMS> MEDICAL; FIELD; DATA; CAPTURE; RETRIEVAL; METHOD;  
ELECTRONIC; DATA; STORAGE; DEVICE|

DC- P85; S05; T04|

IC- <MAIN> G09G-005/00|

MC- <EPI> S05-G02G1; T04-K02|

FS- EPI; EngPI||

?

? show files;ds

File 135:NewsRx Weekly Reports 1995-2005/Jun W4  
(c) 2005 NewsRx  
File 476:Financial Times Fulltext 1982-2005/Jun 30  
(c) 2005 Financial Times Ltd  
File 483:Newspaper Abs Daily 1986-2005/Jun 18  
(c) 2005 ProQuest Info&Learning  
File 487:Columbus Ledger-Enquirer 1994-2005/Jun 30  
(c) 2005 R. W. Page Corp.  
File 633:Phil.Inquirer 1983-2005/Jun 27  
(c) 2005 Philadelphia Newspapers Inc  
File 641:Rocky Mountain News Jun 1989-2005/Jul 01  
(c) 2005 Scripps Howard News  
File 707:The Seattle Times 1989-2005/Jun 30  
(c) 2005 Seattle Times  
File 717:The Washington Times Jun 1989-2005/Jun 30  
(c) 2005 Washington Times  
File 718:Pittsburgh Post-Gazette Jun 1990-2005/Jul 01  
(c) 2005 PG Publishing  
File 740:(Memphis)Comm.Appeal 1990-2005/Jun 30  
(c) 2005 The Commercial Appeal  
File 813:PR Newswire 1987-1999/Apr 30  
(c) 1999 PR Newswire Association Inc  
File 861:UPI News 1996-1999/May 27  
(c) 1999 United Press International

Set	Items	Description
S1	18	(AU=(REEVES, W? OR REEVES W?) OR WILLIAM(1W)REEVES)(50N)(S-OLDIER OR WAR OR BATTLEFIELD OR BATTLE)(10N)(MEDICAL OR HEALTH OR VITAL OR PERSONAL) NOT PY>2000
S2	15	RD (unique items)

? t2/3,k/all

2/3,K/1 (Item 1 from file: 135)

DIALOG(R)File 135:NewsRx Weekly Reports  
(c) 2005 NewsRx. All rts. reserv.

0000003855 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**U.S. Gulf War Veterans More Likely To Be Ill**  
Medical Letter on the CDC & FDA, June 26, 1995, p.6-7

DOCUMENT TYPE: Editor's Choice LANGUAGE: English  
RECORD TYPE: FULLTEXT  
WORD COUNT: 328

TEXT: American soldiers who served in the Gulf War are up to 13 times more likely to suffer chronic ailments such as diarrhea and memory loss than those who stayed at home, CDC's Dr. William Reeves reported on June 15, 1995.

Preliminary results from a U.S. study involving more than...

...that veterans of Desert Shield and Desert Storm are significantly more susceptible to a dozen health problems known generically as Gulf War Syndrome.

2/3,K/2 (Item 1 from file: 476)

DIALOG(R)File 476:Financial Times Fulltext  
(c) 2005 Financial Times Ltd. All rts. reserv.

0001510159 B0CDHCFACPFT  
**Collecting: The splendours of T'ang and Song**  
JUNE FIELD  
Financial Times, P 13  
Saturday, May 29, 1982  
DOCUMENT TYPE: NEWSPAPER LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT  
Word Count: 1,123

TEXT:  
...ceramics collector.

The daughter of the New Zealand Cabinet minister and High Commissioner to

Ginger R. DeMille

Britain, **William Pember Reeves**, for 60 years she was a well-known campaigner for women's rights, and when only 28 was appointed Director of Women's Wages during World War I. Winston Churchill offered her a job as his **personal** secretary, but she turned it down.

2/3,K/3 (Item 1 from file: 483)

DIALOG(R)File 483:Newspaper Abs Daily  
(c) 2005 ProQuest Info&Learning. All rts. reserv.

04340541

**CDC stalks mysterious gulf illness**

Rochell, Anne

Atlanta Journal Constitution, Sec F, p 2, col 1

Dec 8, 1996

NEWSPAPER CODE: ATCJ

DOCUMENT TYPE: Interview; Newspaper

LANGUAGE: English RECORD TYPE: ABSTRACT

LENGTH: Long (18+ col inches)

ABSTRACT: **William C. Reeves**, chief of the Viral Exanthems and Herpes Virus Branch at the CDC's National Center...

...in Atlanta, discusses in an interview the CDC's involvement with a study of Gulf War Syndrome and what could be causing the sickness that affects many Gulf War veterans. Graphs show the percentage of troops reporting various chronic health problems.

2/3,K/4 (Item 1 from file: 487)

DIALOG(R)File 487:Columbus Ledger-Enquirer  
(c) 2005 R. W. Page Corp. All rts. reserv.

08834066 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**MORE GULF WAR VETS REPORTING ILLNESSES**

From wire reports

Ledger-Enquirer, FINAL ED, P P13

Friday, November 29, 1996

LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT SECTION HEADING: BENNING

LEADER

Word Count: 371

(USE FORMAT 7 OR 9 FOR FULLTEXT)

...blame any infectious agents that are common in the Persian Gulf region, CDC investigator Dr. **William Reeves** said today.

"We have found that there is nothing unique to the Persian Gulf, other ...

...said.

When the study is published, it is expected to link some of the veterans' **health** complaints to chronic fatigue syndrome and **battlefield** stress, Reeves said.

Many veterans have attributed their illnesses to exposure to chemical agents, biological...

2/3,K/5 (Item 1 from file: 633)

DIALOG(R)File 633:Phil.Inquirer  
(c) 2005 Philadelphia Newspapers Inc. All rts. reserv.

08168218

**STUDY FINDS CHRONIC ILLS IN GULF VETS**

Philadelphia Inquirer (PI) - FRIDAY June 16, 1995

By: David Morgan, REUTERS

Edition: FINAL Section: NATIONAL Page: A12

Word Count: 419

**Will iam Reeves**, the researcher at the U.S. Centers for Disease

Ginger R. DeMille

Control and Prevention who is overseeing the study, said it was too early to conclude that gulf war veterans suffered from a disease peculiar to them.

In fact, the CDC has evidence that similar ailments may have plagued American soldiers as far back as the Civil War .

"I would not say there is a gulf war syndrome," Reeves said. "People went to the gulf and are coming back with chronic health problems. The problems are significantly more common among those who went than among those who..."

2/3,k/6 (Item 1 from file: 641)  
DIALOG(R)File 641:Rocky Mountain News  
(c) 2005 Scripps Howard News. All rts. reserv.

08169014

**STUDY ANOTHER GOOD REASON TO EAT MORE FRUITS AND VEGETABLES**

Rocky Mountain News (RM) - SATURDAY JUNE 17, 1995

By: ROCKY MOUNTAIN NEWS WIRE SERVICES

Edition: FINAL Section: NEWS/NATIONAL/INTERNATIONAL Page: 40A

Word Count: 523

... suffer chronic ailments such as diarrhea and memory loss than those who stayed at home, health experts reported Thursday.

Preliminary results from a U.S. study involving more than 3,900...

... the first time that veterans of Desert Storm are significantly more susceptible to a dozen health problems known generically as Gulf War Syndrome.

Dr. William Reeves, the researcher at the U.S. Centers for Disease Control and Prevention in Atlanta who is overseeing the study, said it is too early to conclude that Gulf War veterans suffer from a disease peculiar to them.

The United States sent 700,000 troops...

2/3,k/7 (Item 1 from file: 707)  
DIALOG(R)File 707:The Seattle Times  
(c) 2005 Seattle Times. All rts. reserv.

08831047

**GULF WAR VETS MORE LIKELY TO HAVE AILMENTS STUDIES FIND REPORTS OF ILLNESS ARE LINKED TO SERVICE IN REGION**

Seattle Times (SE) - Tuesday November 26, 1996

By: AP

Edition: FINAL Section: NEWS Page: A6

Word Count: 398

... blame any infectious agents that are common in the Persian Gulf region, CDC investigator Dr. William Reeves said today.

"We have found that there is nothing unique to the Persian Gulf, other ...

...said.

When the study is published, it is expected to link some of the veterans' health complaints to chronic fatigue syndrome and battlefield stress, Reeves said.

Many veterans have attributed their illnesses to exposure to chemical agents, biological...

2/3,k/8 (Item 1 from file: 717)  
DIALOG(R)File 717:The Washington Times  
(c) 2005 Washington Times. All rts. reserv.



08167058

**Gulf veterans susceptible to ailments**

Washington Times (WT) - Friday, June 16, 1995

By: FROM WIRE DISPATCHES AND STAFF REPORTS

Edition: Final Section: NATION AMERICAN SCENE Page: A6

Word Count: 118

... that veterans of Desert Shield and Desert Storm are significantly more susceptible to a dozen **health** problems known generically as Gulf war syndrome.

Dr. **William Reeves**, the researcher at the U.S. Centers for Disease Control and Prevention (CDC) who is overseeing the study, said it is too early to conclude that Gulf war veterans suffer from a disease peculiar to them.

Q0101378-061695

**2/3,K/9 (Item 1 from file: 718)**

DIALOG(R)File 718:Pittsburgh Post-Gazette

(c) 2005 PG Publishing. All rts. reserv.

08168092

**GULF VETS AT MEDICAL RISK SUSCEPTIBILITY TO CHRONIC ILLS 13 TIMES HIGHER THAN THAT OF NON-VETS**

Pittsburgh Post-Gazette (PT) - FRIDAY JUNE 16, 1995

By: DAVID MORGAN, REUTERS NEWS SERVICE

Edition: SOONER Section: SCIENCE, TECHNOLOGY & MEDICINE Page: A-3

Word Count: 458

Dr. **William Reeves**, the researcher at the U.S. Centers for Disease Control and Prevention who is overseeing the study, said it is too early to conclude that Gulf war veterans suffer from a disease peculiar to them.

In fact, the CDC has historical evidence that similar ailments may have plagued American soldiers as far back as the Civil war .

"I would not say there is a Gulf War Syndrome," Reeves said. "People went to the gulf and are coming back with chronic **health** problems. The problems are significantly more common among those who went than among those who..."

**2/3,K/10 (Item 1 from file: 740)**

DIALOG(R)File 740:(Memphis)Comm.Appeal

(c) 2005 The Commercial Appeal. All rts. reserv.

10335060

**DEATHS**

Commercial Appeal (Memphis) (CA) - WEDNESDAY, December 1, 1999

Edition: First Section: Metro Page: B4

Word Count: 2,857

... She was a member of Spring Hill Baptist Church. Mrs. Reeves was the widow of **William Reeves** .

INDIANOLA - Clyde Edmonds Harthcock, 73, president of Planters Gin and warehouse, died of a blood disorder Monday at Indianola **Health** and Rehabilitation Center. Services will be at 10 a.m. Thursday at First United Methodist...

...with burial in Indianola City Cemetery. Card Funeral Home has charge. He was a World war II Army veteran, a member of Southern Cotton Gin Association Board of Directors and a...

**2/3,K/11 (Item 2 from file: 740)**

DIALOG(R)File 740:(Memphis)Comm.Appeal

(c) 2005 The Commercial Appeal. All rts. reserv.

08167051

Ginger R. DeMille

**GULF VETS HOLD HIGHER RISK OF CHRONIC ILLS, EXPERTS FIND**  
COMMERCIAL APPEAL (Memphis) (CA) - FRIDAY, June 16, 1995  
By: Reuters  
Edition: First Section: News Page: A12  
Word Count: 184

TEXT:

... that veterans of Desert Shield and Desert Storm are significantly more susceptible to a dozen **health** problems known generically as Gulf War Syndrome.

Dr. **William Reeves**, researcher at the U.S. Centers for Disease Control and Prevention, said it is too early to conclude that Gulf War veterans suffer from a disease peculiar to them. In fact, the CDC has historical evidence that similar ailments may have plagued American soldiers as far back as the Civil War.

of 700,000 U.S. troops sent to the gulf between August 1990 and June...

**2/3,K/12 (Item 1 from file: 813)**  
DIALOG(R)File 813:PR Newswire  
(c) 1999 PR Newswire Association Inc. All rts. reserv.

1050095 DCTH033  
**VFW to Host Forum on Gulf War Illness**

DATE: January 30, 1997 16:01 EST WORD COUNT: 396

...chemical agents.

Expected to make presentations are Dr. Joseph S. Cassells, a Senior Adviser for **Medical** and Clinical Issues with the Presidential Advisory Committee on Gulf War Veterans' Illnesses, and Dr. **William C. Reeves**, a specialist with the Center for Disease Control in Atlanta and a member of the...

...Committee.

Two specialists from the Department of Veterans Affairs, Dr. Susan H. Mather, Assistant Chief **Medical** Director for Environmental Medicine and Public **Health**, and Dr. Fran M. Murphy, Director of Environmental Agents Service, will outline the issue of...

**2/3,K/13 (Item 1 from file: 861)**  
DIALOG(R)File 861:UPI News  
(c) 1999 United Press International. All rts. reserv.

02525167 Supplier Number: 331u1714 (USE FORMAT 7 OR 9 FOR Fulltext)

**Civilians get 'Gulf war illness' too UPI Science News**

UPI News

Nov. 27, 1996 16:28 E.T.

DOCUMENT TYPE: Newswire RECORD TYPE: Fulltext LANGUAGE: English  
WORD COUNT: 533

WASHINGTON, Nov. 26 (UPI) The illness found in Gulf War vets shows up in civilians too, but going to the Gulf seemed to boost the risks of getting symptoms, federal **health** officials said Tuesday.

**William Reeves**, a branch chief from the Centers for Disease Control and Prevention, discussed details Tuesday of the unpublished Gulf War study published in the New York Times.

The CDC study of about 4,000 Air Force personnel is one of the first to show that Gulf War veterans have more **health** problems than other people. Another study to reach that conclusion focuses on the Navy and...

**2/3,K/14 (Item 2 from file: 861)**  
DIALOG(R)File 861:UPI News

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02524820            Supplier Number: 332u0245    (USE FORMAT 7 OR 9 FOR  
Fulltext)  
**Health Notes**  
UPI News  
Nov. 27, 1996 03:34 E.T.  
DOCUMENT TYPE: Newswire    RECORD TYPE: Fulltext    LANGUAGE: English  
WORD COUNT:                596

...lower because of greater difficulty in managing problems on an outpatient basis."

CIVILIANS GET "GULF WAR ILLNESS" TOO: The illness found in Gulf war vets shows up in civilians too, but going to the Gulf seemed to boost the risks of getting symptoms, say U.S. health officials. William Reeves, a branch chief from the Centers for Disease Control and Prevention, is putting the final polish on one of the first studies to show that Gulf war veterans have extra health problems. "The illness exists in people who didn't go," Reeves says. However, he found that among Gulf war vets, "the risk of illness was substantially higher

" In the CDC study of about 4...

2/3,K/15            (Item 3 from file: 861)  
DIALOG(R)File 861:UPI News  
(c) 1999 United Press International. All rts. reserv.

02524725            Supplier Number: 331u1701    (USE FORMAT 7 OR 9 FOR  
Fulltext)  
**Civilians get "Gulf war illness too**  
UPI News  
Nov. 26, 1996 18:35 E.T.  
DOCUMENT TYPE: Newswire    RECORD TYPE: Fulltext    LANGUAGE: English  
WORD COUNT:                65

TEXT:  
WASHINGTON, Nov. 26 (UPI S) The illness found in Gulf war vets shows up in people who stayed home, but going to the Gulf boosted the risks of getting symptoms, say (Tuesday) federal health officials. William Reeves from the Centers for Disease Control and Prevention says the health problems he has documented may have occurred after earlier wars but no one studied them.

...

Ginger R. DeMille

? show files;ds

File 582:Augusta Chronicle 1996- 2005/Jun 30

(c) 2005 Augusta Chronicle

File 781:ProQuest Newsstand 1998-2005/Jul 01

(c) 2005 ProQuest Info&Learning

Set Items Description

S1 2 (AU=(REEVES, W? OR REEVES W?) OR WILLIAM(1W)REEVES)(50N)(MEDICAL OR HEALTH OR VITAL OR PERSONAL)()(HISTORY OR RECORD? ? OR DATA OR INFORMATION) NOT PY>2000

? t1/3,k/all

**1/3,K/1 (Item 1 from file: 582)**

DIALOG(R)File 582:Augusta Chronicle

(c) 2005 Augusta Chronicle. All rts. reserv.

10178084 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**CDC ACCUSED OF DIVERTING STUDY FUNDS**

Associated Press

Augusta Chronicle, GEORGIA ED, P B02

Sunday, June 27, 1999

LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT SECTION HEADING: METRO

Word Count: 532

(USE FORMAT 7 OR 9 FOR FULLTEXT)

...got a real dilemma," said Dr. John Renner, president of the National Council for Reliable **Health Information** . "Spending money wisely is what's got to be done."

In his complaint to Congress, Dr. **William C. Reeves** , a branch chief in the CDC's National Center for Infectious Diseases, accused Dr. Claire...

**1/3,K/2 (Item 1 from file: 781)**

DIALOG(R)File 781:ProQuest Newsstand

(c) 2005 ProQuest Info&Learning. All rts. reserv.

05366675 LANC546766 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Researchers divert funds earmarked for studying chronic fatigue syndrome**

Lancaster New Era Lancaster, PA

Tuesday, July 6, 1999

DOCUMENT TYPE: Newspaper, Small LANGUAGE: ENGLISH RECORD TYPE:

FULLTEXT

Word Count: 538

(USE FORMAT 7 OR 9 FOR FULLTEXT)

...got a real dilemma," says Dr. John Renner, president of the National Council for Reliable **Health Information** . "Spending money wisely is what's got to be done."

In his complaint to Congress, Dr. **William Reeves** , a branch chief in the CDC's National Center for Infectious Diseases, accused Dr. Claire...

?

? show files;ds

File 9:Business & Industry(R) Jul/1994-2005/Jun 30  
(c) 2005 The Gale Group  
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File 736:Seattle Post-Int. 1990-2005/Jun 30  
(c) 2005 Seattle Post-Intelligencer  
File 757:Mirror Publications/Independent Newspapers 2000-2005/Jul 01  
(c) 2005  
File 781:ProQuest Newsstand 1998-2005/Jul 01  
(c) 2005 ProQuest Info&Learning  
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(c) 1999 PR Newswire Association Inc  
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(c) 2005 The Dialog Corporation  
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(c) 2005 The Dialog Corporation

Set	Items	Description
S1	55	(PENDANT? OR OBELISK? OR OBELISC? OR SAUCER? ? OR BRACELET? ? OR JEWELRY OR NECKLACE? OR (HANG? OR AROUND OR SURROUND?)(- 1W)NECK OR ADORNMENT)(20N)(MEDICAL OR HEALTH OR VITAL OR PERS- ONAL)()(RECORD? ? OR DATA OR INFORMATION)(50N)(SOLDIER OR WAR OR BATTLEFIE

S2 32 RD (unique items)  
? t2/3,k/all

2/3,K/1 (Item 1 from file: 9)  
DIALOG(R)File 9:Business & Industry(R)  
(c) 2005 The Gale Group. All rts. reserv.

03319866 Supplier Number: 116715424 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**Rockville, Md.-Based Firm Aims to Develop Wireless Dog Tag.**

Knight-Ridder Tribune Business News  
May 18, 2004  
DOCUMENT TYPE: Regional Newspaper (United States)  
LANGUAGE: English RECORD TYPE: Fulltext  
WORD COUNT: 520

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:  
...challenge," said Andrew D. Girson, chief executive of InHand.

The idea is to have a **soldier's medical information** -- blood type, allergies, medication, x-rays, medical history and current treatment -- on a device that is about the size of a dog tag and worn **around the neck**.

The information could be read by a wireless handheld device, which would save time in...

2/3,K/2 (Item 1 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2005 The Gale Group. All rts. reserv.

11944889 Supplier Number: 131058871 (USE FORMAT 7 FOR FULLTEXT)  
**Irvine Sensors to Show Electronic 'Dog Tag' at ATA Conference; Operational Demonstrations Set for April 17 - 20, 2005 in Denver.**

PR Newswire, pNA  
March 22, 2005  
Language: English Record Type: Fulltext  
Document Type: Newswire; Trade  
Word Count: 751

(USE FORMAT 7 FOR FULLTEXT)

TEXT:  
...which has the familiar size and look of a standard military identification dog tag worn **around the neck**. The Irvine Sensors' electronic dog tag incorporates wireless communication using Secure Radio Frequency transmission, a...

...of personnel and record and transmit any medical care activity in all environments, including the **battlefield**, using a handheld **personal data** assistant ("PDA") developed by the military for point-of-care use. The Irvine Sensors development...

2/3,K/3 (Item 2 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2005 The Gale Group. All rts. reserv.

09631574 Supplier Number: 83773414 (USE FORMAT 7 FOR FULLTEXT)  
**Reporters' Notebook.**  
Defense Week, v23, n11, p4  
March 11, 2002  
Language: English Record Type: Fulltext  
Document Type: Newsletter; Trade  
Word Count: 861

... pieces and then was severely beaten.  
After the Japanese surrendered in 1945, Chalker was a **War Artist** attached to Australian headquarters in Bangkok, where he completed more work for the official **war history and medical records**.  
Among the works on the block, "Studies of tropical ulcers, Chunkai."

Of this drawing, Chalker...

...greatly. The watercolor "Punishment" shows a prisoner tied to a post, with a tin container **around** his **neck** filled with stones or water, "he was in great distress and clearly the Japanese intended..."

2/3,K/4 (Item 3 from file: 16)

DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2005 The Gale Group. All rts. reserv.

08216997 Supplier Number: 69070978 (USE FORMAT 7 FOR FULLTEXT)

**UK market.(Brief Article)**

Israel Business Today, v14, n12, p3  
Dec, 2000

Language: English Record Type: Fulltext  
Article Type: Brief Article  
Document Type: Magazine/Journal; General Trade  
Word Count: 394

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

...tag. The old style metal type of dog tag that holds a few of a **soldier**'s personal details will soon have competition from a new tag developed by San Disk...

...personal is a small memory chip mounted on a disk embedded in a piece of **jewelry** that is worn **around** the **neck**. The chip contains personal and **medical information** about its owner and can be accessed by a scanner. A person's most important...

2/3,K/5 (Item 1 from file: 20)

DIALOG(R)File 20:Dialog Global Reporter  
(c) 2005 The Dialog Corp. All rts. reserv.

41346800 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Irvine Sensors to Show Electronic 'Dog Tag' at ATA Conference**

PR NEWSWIRE (US)

March 22, 2005

JOURNAL CODE: WPRU LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 692

... which has the familiar size and look of a standard military identification dog tag worn **around** the **neck**. The Irvine Sensors' electronic dog tag incorporates wireless communication using Secure Radio Frequency transmission, a...

... of personnel and record and transmit any medical care activity in all environments, including the **battlefield**, using a handheld **personal data** assistant ("PDA") developed by the military for point-of-care use. The Irvine Sensors development...

2/3,K/6 (Item 2 from file: 20)

DIALOG(R)File 20:Dialog Global Reporter  
(c) 2005 The Dialog Corp. All rts. reserv.

41161210 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Ohio State U.: COLUMN: New Ohio bill troubling**

David Cross

UNIVERSITY WIRE

March 11, 2005

JOURNAL CODE: WUWI LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 488

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... mean for the Ohio? It means that ever so slowly a noose is being tied **around** its **neck**. Even with the specifying of "terrorist-sensitive sites" the act of forcing individuals to give up **personal information** on a whim is ridiculous.

I understand that the nation is fighting a war on terror and that there are many people that believe the security of our nation...

**2/3,K/7 (Item 3 from file: 20)**

DIALOG(R)File 20:Dialog Global Reporter  
(c) 2005 The Dialog Corp. All rts. reserv.

39075907 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Dumped OAP was 'ignored by family'**

DAILY RECORD

November 17, 2004

JOURNAL CODE: FDRE LANGUAGE: English RECORD TYPE: FULLTEXT

WORD COUNT: 232

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... at abandoning him at the hospital - insisting it was the only way Ken, a World War II pilot, would get the care he needed.  
Barbara left the 82-year-old in...

...month, before jetting home to Spain.

Last night, she denied leaving Ken with a sign around his neck.  
She said: 'I put a letter giving my reasons for taking him there along with his medical records.'

**2/3,K/8 (Item 4 from file: 20)**

DIALOG(R)File 20:Dialog Global Reporter  
(c) 2005 The Dialog Corp. All rts. reserv.

07473271 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**ADVISORY/U.S. Soldiers to Wear Digital Dog Tags**

BUSINESS WIRE

September 28, 1999

JOURNAL CODE: WBWE LANGUAGE: English RECORD TYPE: FULLTEXT

WORD COUNT: 425

...WIRE)--Sept. 28, 1999--

TOPIC: Beginning this fall, the Pentagon will issue matchbook-size digital "personal information carriers" to its soldiers. Unlike traditional dog tags which only list a soldier's name, social security number, religion and blood type, the digital version will contain thousands of pages of medical information that can be read by computers at battlefield aid stations. Worn around the neck along with original dog tags, the cards will be used to track wartime treatments and...

**2/3,K/9 (Item 1 from file: 141)**

DIALOG(R)File 141:Readers Guide  
(c) 2005 The HW Wilson Co. All rts. reserv.

04268524 H.W. WILSON RECORD NUMBER: BRGA00018524 (USE FORMAT 7 FOR FULLTEXT)

**Medical history on a "chip".**

AUGMENTED TITLE: electronic dog tags

Poptronics v. 1 no3 (Mar. 2000) p. 10-11

WORD COUNT: 426

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

Presented as the world's first solid-state, wearable data-storage device, the **Personal Information Carrier (PIC)** is being supplied to the U.S. Army. Under contract to the Department...

...use a low-cost, easily integrated serial interface. These next-generation electronic dog tags, worn around the neck by military personnel along with the traditional dog tag, will store medical records and identification information.

The PIC is intended to fill the data gap that was identified during the Persian Gulf war. Several problems occurred. The past medical data



of service personnel was not always available on the **battlefield** . In the paper-based system that was in use, treatments and exposures were not consistently...

**2/3,K/10 (Item 1 from file: 258)**

DIALOG(R)File 258:AP News Jul  
(c) 2005 Associated Press. All rts. reserv.

0003061925 I0D009E406A4D11D8A148EBA5C029E821 (USE FORMAT 7 FOR FULLTEXT)  
**Veteran's dog tag returned three decades after service**  
Associated Press  
Sunday, February 22, 2004 T16:41:00Z  
JOURNAL CODE: AP LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT  
WORD COUNT: 728

...come in pairs as 1-by-2-inch aluminum plates that are stamped with a **soldier's personal information** and worn into battle. They can help a medic who needs to know someone's...

...their more ominous function is to identify the dead.

Jerry Muhs served as an infantry **soldier** in 1970.

There is a cold reality to dog tags, says Muhs, now a therapist at the Readjustment Counseling Services agency of the VA. "In Vietnam, you would wear one **around your neck** and one in your boot. In case your foot was separated from the rest of...

**2/3,K/11 (Item 2 from file: 258)**

DIALOG(R)File 258:AP News Jul  
(c) 2005 Associated Press. All rts. reserv.

00640806 (USE FORMAT 7 FOR FULLTEXT)  
**EARTHQUAKE: As death toll mounts, survival becomes less likely**  
Associated Press  
Tuesday, January 16, 2001 13:06 EST  
JOURNAL CODE: AP LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT  
DOCUMENT TYPE: NEWSWIRE  
WORD COUNT: 1,137

...URANIUM: Study shows no link between cancer, uranium munitions

BRUSSELS, Belgium -- An initial study of **health records** showed no connection between depleted uranium munitions and cancer among soldiers who served in the...

...Photo FAR101.

AMERICAS:

US-HOLOCAUST: Report details U.S. failures in dealing with victims after **war**

WASHINGTON -- Holocaust victims didn't get back **jewelry**, art, and other property plundered by Nazi Germany because the United States and allies had...

**2/3,K/12 (Item 1 from file: 432)**

DIALOG(R)File 432:Tampa Tribune  
(c) 2005 Tampa Tribune. All rts. reserv.

13134999 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**STRAWBERRY FESTIVAL WINNERS STRAWBERRY FESTIVAL WINNERS**  
Barbara Kent  
Tampa Tribune, FINAL ED, P 15  
SATURDAY, May 14, 2005  
LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT SECTION HEADING: PLANT CITY  
Word Count: 1,949

(USE FORMAT 7 OR 9 FOR FULLTEXT)

...two awards), Lauren Llop, Kyle Martin, Kassy Mendenall, Marissa Navarro (four awards), Stephanie Rumore, Alyssa **Shepherd**, Ethan Sistrunk, Kaleb Sistrunk, Morgan Sistrunk, Chelsea Siverling, Shelby St. Amant, Kelly St. Onge, Allison Thomas, Selena Williams, Stephen Witchoskey, Brooke Wyatt, Taylor Wyatt, **Debra** Yehle (two awards).

\$6 winners: Ali Boggs (two awards), Mollie Carroll, Ariel Emerson (two awards), Ashley Gay, Stacey **Heckerman**, Jamie Huff, **Emily Kenyon**, Sarah Miller (two awards), Sean Moilanen, Megan Murphy, Travis Nowlin, Elizabeth Ott, Amanda Salazar, Lisa Smith.  
YOUTH POULTRY SHOW

**Grand** Champion, Brittany Wagner; Reserve Grand Champion, Ben Hilbrands.

\$7 winners: David Altland (two awards), Jacob Burnette (five awards), Bridget Carr (five awards), Brittany Coleman ( **two awards** ), Carson Corbett (four awards), Kathy Corbett (four awards), Ashley Dawes, Amy Doyen, Marcus Farmer (two awards), Alexander Fernandez (two awards), Nicholas Fernandez, **Zen** Gradits (four awards), Adam Harlow (four awards), Cassidy Hasting, Darby Hasting (three awards), Katie Hayes...

...awards), Kelsey Hough (two awards), Jared Inlow, Kees Jenkins (four awards), Khristina Knight (two awards), **Lindsey** Laycock (three awards), Shane Lyle, (two awards), Amber Muehl (two awards), Marissa Navano, Travis Nowlin...

**2/3,K/13 (Item 2 from file: 432)**  
DIALOG(R)File 432:Tampa Tribune  
(c) 2005 Tampa Tribune. All rts. reserv.

13121999 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**Centers Of Excellence Make Case For Expansion**  
JACK SULLIVAN JR.  
Tampa Tribune, FINAL ED, P 6  
SUNDAY, May 01, 2005  
LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT SECTION HEADING: COMMENTARY  
Word Count: 567

(USE FORMAT 7 OR 9 FOR FULLTEXT)

...Jeb Bush proposed a radical idea to transform and diversify Florida's economy: a competitive **process** to allocate seed funds to **enhance** the talent, facilities and equipment at university research programs.

**Among** the selection factors were how well the research **program** would stimulate technology-based business in Florida, how effectively it could **leverage** state **funding** with federal and private **funds**, the **strength** of the university in the identified research area and the potential for recruitment and retention of world-class scholars.

To back it up, the governor included \$100 **million** in his 2002-03 budget. The Legislature chose **a** more conservative approach to the then-untested concept, allocating \$30 million in three equal grants...

**2/3,K/14 (Item 3 from file: 432)**  
DIALOG(R)File 432:Tampa Tribune  
(c) 2005 Tampa Tribune. All rts. reserv.

13092999 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**(NATION/WORLD RAIL) ON THIS DATE**  
Tampa Tribune, FINAL ED, P 2  
SATURDAY, April 02, 2005  
LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT SECTION HEADING: NATION/WORLD  
Word Count: 172

(USE FORMAT 7 OR 9 FOR FULLTEXT)

**2/3,K/15 (Item 1 from file: 483)**

DIALOG(R)File 483:Newspaper Abs Daily  
(c) 2005 ProQuest Info&Learning. All rts. reserv.

05716089

**SanDisk, Kaneb Collar Contract On Digital Dog Tag**

Thurm, Scott

Wall Street Journal, Sec C, p 21, col 3

Sep 28, 1999

ISSN: 0099-9660 NEWSPAPER CODE: WSJ

DOCUMENT TYPE: News; Newspaper

LANGUAGE: English RECORD TYPE: ABSTRACT

LENGTH: Medium (6-18 col inches)

...ABSTRACT: issue the first "digital dog tags," matchbook-size cards that store thousands of pages of **medical records** that can be retrieved by a computer at a **battlefield** aid station. The so-called **personal information** carriers are similar to the tiny disks that store images in a digital camera or sound in an MP3 player. They will be worn **around** the **neck** along with traditional dog tags and are intended to make it easier to treat soldiers...

**2/3,K/16 (Item 1 from file: 484)**

DIALOG(R)File 484:Periodical Abs Plustext  
(c) 2005 ProQuest. All rts. reserv.

04936029 SUPPLIER NUMBER: 66062348 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Dog tag health card**

Burnham, Travis

Soldiers (FSDR), v55 n12, p9, p.1

Dec 2000

ISSN: 0093-8440 JOURNAL CODE: FSDR

DOCUMENT TYPE: News

LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 412

TEXT:

... other ultramodern initiatives in the limelight at the Joint Contingency Force Advanced Warfighting Experiment, the "**Personal Information** Carrier," or PIC, won't help defeat an adversary. But this small computer chip shows...

...if they are injured.

Not much larger than a thumbnail, the PIC can store a **soldier's** entire medical history and can be worn **around** the **neck** along with personal identification tags. The innovative device enables medical personnel to access and update soldiers' **medical records** almost anywhere.

"The number-one advantage to the PIC is that we have data on the **soldier** while out in the field," said MAJ Cathy Beck of the U.S. Army Medical...

**2/3,K/17 (Item 2 from file: 484)**

DIALOG(R)File 484:Periodical Abs Plustext  
(c) 2005 ProQuest. All rts. reserv.

04377278 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Emergent telemedicine components deliver expertise to front-line forces**

Lawlor, Maryann

Signal (FSIG), v53 n11, p35-37, p.3

Jul 1999

ISSN: 0037-4938 JOURNAL CODE: FSIG

DOCUMENT TYPE: Feature

LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 2208

TEXT:

... the center received seven possible technologies that would allow individual soldiers to carry their entire **medical record** on a device that could be as small as a dime but no larger than a military

Ginger R. DeMille

identification card. The item could be worn as a ring or on a **necklace** like a dog tag or, using smart-card technology, carried in a pocket, according to...

...Beck, USA, chief, information science division, TATRC.

During an emergency, a medic could access the **soldier's** medical history from the tag and then input information about the medical treatment administered...

**2/3,K/18 (Item 1 from file: 498)**

DIALOG(R)File 498:Detroit Free Press

(c) 2005 Detroit Free Press Inc. All rts. reserv.

12569014

**TUMMY TIME HELPS BABIES CRAWL, WALK**

Detroit Free Press (FP) - Tuesday, March 9, 2004

By: Free Press news services

Edition: METRO FINAL Section: SCI; BODY & MIND Page: 3H

Word Count: 374

... study examined what happened two decades after a stressful event, in this case the Vietnam **War**.

A Vietnam combat veteran, Boscarino presented his findings March 5 at the American Psychosomatic Society's annual meeting in Orlando, Fla.

Boscarino analyzed the **medical records** of 2,490 Vietnam veterans who took part in a national study in 1986. At...

... of the study, 54 of the veterans suffered from post-traumatic stress disorder.

FDA approves **bracelet** for nausea

The U.S. Food and Drug Administration has approved the Sea-Band acupressure...

**2/3,K/19 (Item 1 from file: 608)**

DIALOG(R)File 608:KR/T Bus.News.

(c)2005 Knight Ridder/Tribune Bus News. All rts. reserv.

07452039 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Rockville, Md.-Based Firm Aims to Develop Wireless Dog Tag**

Bill Atkinson

Baltimore Sun

May 18, 2004

DOCUMENT TYPE: NEWSPAPER

RECORD TYPE: FULLTEXT

LANGUAGE: ENGLISH

WORD COUNT: 591

...TEXT: Inc. is working with the military to develop a wireless dog tag that stores a **soldier's medical records**, can run for five or 10 years on a battery and withstand sweat, dirt, grime...

...challenge," said Andrew D. Girson, chief executive of InHand.

The idea is to have a **soldier's medical information** -- blood type, allergies, medication, x-rays, medical history and current treatment -- on a device that is about the size of a dog tag and worn **around the neck**.

The information could be read by a wireless handheld device, which would save time in...

**2/3,K/20 (Item 1 from file: 624)**

DIALOG(R)File 624:McGraw-Hill Publications

(c) 2005 McGraw-Hill Co. Inc. All rts. reserv.

01042488

**SANDISK'S FLASH MEMORY IS BEING USED**

EDITED BY BRUCE D. NORDWALL

Aviation Week & Space Technology, Vol. 151, No. 14, Pg 63

October 4, 1999

JOURNAL CODE: AW  
SECTION HEADING: FILTER CENTER ISSN: 0005-2175  
WORD COUNT: 192

TEXT:

SANDISK'S FLASH MEMORY IS BEING USED in **Personal Information Carriers (PICs)** that the U.S. Army is buying to equip each **soldier** with a "wearable" solid-state data storage device. Slightly smaller than the military dog-tag, it will also be worn **around the neck** to store **medical records** and identification. The Army awarded a \$34-million contract to Informattech Inc. of Frederick, Md...

... which currently stores 8 megabytes of data, but could grow to 96 MB in 2000. **Medical records** will be written into the PIC before a deployment. To read data, the PIC slides...

**2/3,K/21 (Item 1 from file: 640)**  
DIALOG(R)File 640:San Francisco Chronicle  
(c) 2005 Chronicle Publ. Co. All rts. reserv.

06810031  
**BUSH KEEPS PROMISE, VETOES TAX MEASURE**  
San Francisco Chronicle (SF) - THURSDAY, November 5, 1992  
By: Associated Press  
Edition: FINAL Section: NEWS Page: A3  
Word Count: 446

... 50 urban and rural enterprise zones, repealed the 10 percent luxury tax on boats, airplanes, **jewelry** and furs and would have ended the tax deduction for club dues.

Also yesterday, Bush signed into law a veterans bill that establishes a registry of **health information** on Persian Gulf **war** veterans who were exposed to pollutants from Kuwaiti oil fires.

The law also authorizes the...

**2/3,K/22 (Item 1 from file: 641)**  
DIALOG(R)File 641:Rocky Mountain News  
(c) 2005 Scripps Howard News. All rts. reserv.

12500000  
**NFL THIS WEEK TEAMS, THE LOWDOWN, NUMBERS GAME, TIPPING THE SCALES**  
Rocky Mountain News (RM) - FRIDAY, November 12, 2004  
By: Richard Lord, Rocky Mountain News  
Edition: Final Section: Football Weekend Page: 9F  
Word Count: 1,370

TEXT:

... timing for Quincy Carter - he makes his first Jets start in place of injured Chad **Pennington** against the nasty Ravens defense. His past (30 TDs, 36 INTs with Dallas) suggests he...

... to the task. The Jets' run defense looked vulnerable against Buffalo. 62.4 passer rating for opposing QBs against the Ravens "D," the lowest rating against any NFL defense. \* Unless Carter shocks the world (unlikely), Baltimore will **crowd the line** of scrimmage, stuff the run, force the pass and prosper. Seattle (5-3) at St. Louis (4-4) 11 a.m. Sunday (Ch. 31) \* A Seattle win puts it in firm control of the NFC West, a loss and it is tied, so this game is huge. **While** the Seahawks have reasserted themselves behind the tough running of Shaun Alexander, the Rams have lost two in a row, **allowing** 71 points in the process. 24 sacks of Rams QB Marc Bulger, including five last **week** in a loss to New England. \* A likely shootout boils down to two questions: Can the Rams protect Bulger? Can St. **Louis** stop Alexander? Toss a coin! **Tampa Bay** (3-5) at Atlanta (6-2) 11 a.m. Sunday \* Certainly many Broncos **fans** find it hard to believe, but Brian Griese **has** saved the Buccaneers' season. He's 3-1 as a starter and has six touchdown...

Ginger R. DeMille

... after a bye) and confident (after beating Denver). 0.9 interception percentage for Buccaneer QB **Griese** (one in 116 passes), the best mark in the league. \* The Buccaneers' defensive line has...

**2/3,K/23 (Item 1 from file: 713)**  
DIALOG(R)File 713:Atlanta J/Const.  
(c) 2005 Atlanta Newspapers. All rts. reserv.

08011060  
**'95 Georgia Legislature Last year's flooding leads to bills requiring coffin IDs**  
Atlanta Constitution (AC) - Wednesday January 11, 1995  
By: Lucy Soto STAFF WRITER  
Section: STATE NEWS Page: C/1  
Word Count: 252

...from 405 coffins that broke loose from two cemeteries with graves dating to the Civil War . The GBI is in charge of identifying the remains of disaster victims.

The caskets floated...

...the caskets back by boat.

The agency identified all but 97 bodies through dental and **medical records** , fingerprints, relatives, **jewelry** , and casket and mortuary information. Last month, the unidentified were buried in a shady cemetery ...

**2/3,K/24 (Item 2 from file: 713)**  
DIALOG(R)File 713:Atlanta J/Const.  
(c) 2005 Atlanta Newspapers. All rts. reserv.

07844033  
**Unknown dead disinterred by flood to get monument GBI unable to find records naming 97**  
Atlanta Journal (AJ) - Friday December 9, 1994  
By: ASSOCIATED PRESS  
Section: STATE NEWS Page: F/4  
Word Count: 440

... city-owned cemeteries - Oakview and Riverview. The cemeteries contained graves dating back to the Civil War .

The cemeteries were heavily damaged and 405 coffins popped out of the ground and floated...

...caskets.

Rescuers towed them back with boats and eventually 308 were identified through dental and **medical records** , fingerprints, **jewelry** , casket and mortuary information and with information provided by relatives.

During the Midwest flood last...

**2/3,K/25 (Item 1 from file: 714)**  
DIALOG(R)File 714:(Baltimore) The Sun  
(c) 2005 Baltimore Sun. All rts. reserv.

12639037  
**Better dog tags in works wireless: InHand Electronics of Rockville is competing to develop a durable, wireless dog tag that would store a soldier's medical records. HIGH TECH WARFARE**  
THE BALTIMORE SUN (BS) - Tuesday May 18, 2004

By: SUN STAFF Bill Atkinson  
Edition: FINAL  
Section: BUSINESS  
Page: 1D

Word Count: 531

...challenge," said Andrew D. Girson, chief executive of InHand.

The idea is to have a **soldier's medical information** - blood type, allergies, medication, X-rays, medical history and current treatment - on a device that is about the size of a dog tag and worn **around the neck**.

The information could be read by a wireless hand-held device, which would save time...

**2/3,K/26 (Item 1 from file: 736)**

DIALOG(R)File 736:Seattle Post-Int.

(c) 2005 Seattle Post-Intelligencer. All rts. reserv.

06810023

**BUSH, WITH 46TH VETO, KILLS TAX INCREASE BILL MEASURE WOULD 'DESTROY JOBS,' PRESIDENT SAYS**

SEATTLE POST-INTELLIGENCER (SP) - THURSDAY November 5, 1992

By: The Associated Press

Edition: FINAL Section: News Page: A3

Word Count: 593

... 50 urban and rural enterprise zones, repealed the 10 percent luxury tax on boats, airplanes, **jewelry** and furs and denied the deductibility of club dues.

It would have allowed individuals with...

...couples.

Also yesterday, Bush signed into law a veterans bill that establishes a registry of **health information** on Persian Gulf **war** veterans who were exposed to pollutants from Kuwaiti oil fires.

The law also authorizes the...

**2/3,K/27 (Item 1 from file: 781)**

DIALOG(R)File 781:ProQuest Newsstand

(c) 2005 ProQuest Info&Learning. All rts. reserv.

12990019 PLQM1000644830 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**COMMENTARY; School kids get first lesson on terrorism**

Michael Kryzanek; MICHAEL KRYZANEK

Patriot Ledger Quincy, MA, RUN OF PAPER ED, P 27

Saturday, April 17, 2004

DOCUMENT TYPE: Newspaper, Small LANGUAGE: ENGLISH RECORD TYPE:

FULLTEXT SECTION HEADING: EDITORIAL; EDITORIALS/OP-ED SECTION

Word Count: 719

(USE FORMAT 7 OR 9 FOR FULLTEXT)

...fallout shelter in case the Soviets launched a nuclear attack. I was even issued a **bracelet** with all my **vital information** in the event of a worst-case scenario. Today, when we are at **war** against terrorism and more than 3,000 fellow Americans have become victims of heinous attacks...

**2/3,K/28 (Item 1 from file: 813)**

DIALOG(R)File 813:PR Newswire

(c) 1999 PR Newswire Association Inc. All rts. reserv.

0481067

NYCFNS1

**STOLEN COMPUTER REGISTRY: FOILING HARDWARE THIEVES**

DATE: May 27, 1992

07:11 EDT

WORD COUNT: 827

...increasing miniaturization of the technology as a boon to

thieves. "We need to start applying 'jewelry security' techniques to laptops, notebooks, and smaller devices," laments Parker.

Then there's the issue...

...of the laptop snatched from the back seat of military vehicle in London that held **vital information** about Gulf War operations.

Finally, thieves are becoming more technology sophisticated in their methods of disposal. Connecticut State...

**2/3,K/29 (Item 1 from file: 990)**  
DIALOG(R)File 990:NewsRoom Current  
(c) 2005 The Dialog Corporation. All rts. reserv.

0983007529 16VG07C8  
**COLUMN: New Ohio bill troubling**  
By David Cross  
University Wire  
Saturday, March 12, 2005  
JOURNAL CODE: CEHB LANGUAGE: English RECORD TYPE: Fulltext  
DOCUMENT TYPE: Newswire  
WORD COUNT: 500

...mean for the Ohio?

It means that ever so slowly a noose is being tied **around its neck**. Even with the specifying of "terrorist-sensitive sites" the act of forcing individuals to give up **personal information** on a whim is ridiculous.

I understand that the nation is fighting a **war** on terror and that there are many people that believe the security of our nation...

**2/3,K/30 (Item 2 from file: 990)**  
DIALOG(R)File 990:NewsRoom Current  
(c) 2005 The Dialog Corporation. All rts. reserv.

0982570009 16VF24CS  
**Ohio State U.: COLUMN: New Ohio bill troubling**  
U-Wire  
Friday, March 11, 2005  
JOURNAL CODE: DJAA LANGUAGE: English RECORD TYPE: Fulltext  
DOCUMENT TYPE: Newswire  
WORD COUNT: 515

...mean for the Ohio?

It means that ever so slowly a noose is being tied **around its neck**. Even with the specifying of "terrorist-sensitive sites" the act of forcing individuals to give up **personal information** on a whim is ridiculous.

I understand that the nation is fighting a **war** on terror and that there are many people that believe the security of our nation...

**2/3,K/31 (Item 1 from file: 991)**  
DIALOG(R)File 991:NewsRoom 2005 Jan 1-2005/Jan 31  
(c) 2005 The Dialog Corporation. All rts. reserv.

0949571871 16TC265Y  
**Armonk family, agency support their soldiers**  
Carlos Perkins  
Journal News, pC1  
Thursday, January 6, 2005  
JOURNAL CODE: ECDG LANGUAGE: English RECORD TYPE: Fulltext  
DOCUMENT TYPE: Newspaper SECTION HEADING: Real Estate  
WORD COUNT: 774

...of kits have been ordered for troops overseas.



when a person or family "adopts" a **soldier**, they receive a free kit that includes the **soldier's personal information** or the address of a platoon contact, care package instructions, a red "My **Soldier**" **bracelet** and a baseball cap to be sent to the **soldier**. Participants can then use the package instructions to personalize a care box for "their" **soldier**.

"We're trying to send things that if (the **soldier**) is male or female, they could use them," Gold said. "We went shopping for multi..."

2/3,K/32 (Item 1 from file: 995)

DIALOG(R)File 995:NewsRoom 2001

(c) 2005 The Dialog Corporation. All rts. reserv.

0267538061 15GR155E

**High-tech 'dog tag' includes soldier's medical history**

Page, Douglas

Diagnostic Imaging, p7

Thursday, May 31, 2001

JOURNAL CODE: AMHS LANGUAGE: ENGLISH RECORD TYPE: Fulltext

DOCUMENT TYPE: Trade Journal ISSN: 0194-2514

WORD COUNT: 654

...and death."

The technology grew out of a data gap identified during the Persian Gulf war, in which past **medical data** of service personnel were not always available when needed on the **battlefield**. In the paper-based system, treatments and exposures during field operations were not consistently documented. Incomplete and nonelectronic repositories of **medical data** after deployment hindered data collection for population-based medical analysis, thus complicating investigations into subsequent Persian Gulf illness.

A "**personal information carrier**" that stores a **soldier's** medical history can be worn on a chain **around the neck**, just like the decades-old metal dog tag. (Provided by SanDisk)

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